Page 6

Atari Users Magazine

Issue 24 £1

November/December

INCLUDING STAGE FOR ST USERS

MUNCHY MADNESS

OUR BEST GAME YET?

AUTOCHECK

LOOK AFTER YOUR MONEY

IN DEPTH REVIEWS

PRINT SHOP COMPANION
THE SLAVE
RAMBIT
BALLYHOO

... and more!

STAGE

The PAGE 6 ST section

DISKS and all you need to know about them

CARTRIDGES and how to make them

Reviews

CAD 3-D
STAR STRUCK
K-GRAPH
K-RESOURCE

ATARI ST

TIME BANDIT



ONE DAY ALL PROGRAMS WILL BE THIS GOOD

microdeal

BOX 68, ST. AUSTELL,
CORNWALL, ENGLAND PL25 4YB.
TEL: (0726) 68020 TELEX 45218 MICROD G

ARMSTRONG

'The magazine for the dedicated Atari user'

Editor & Publisher
Les Ellingham

Correspondence
PAGE 6 Magazine
P.O. Box 54,
Stafford
ST16 1DR
ENGLAND

Editorial & Advertising
0785 213928

Printed by
Stafford Reprographics Ltd.
0785 3533

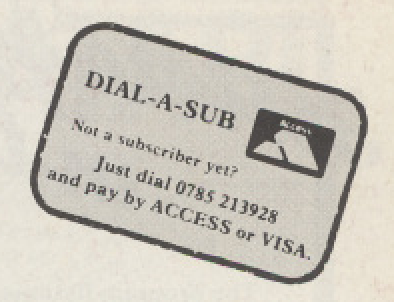
Typeset by
Hourds Typographica,
Stafford
0785 57700

Copy date for next issue is 3rd November. Publication date is 15th December 1986

PAGE 6 is published bi-monthly on the 1st of each alternative month.

PAGE 6 is a users' magazine which relies entirely on readers' support in submitting articles and programs. The aim is to explore ATARI computing through the exchange of information and knowledge. We will endeavour to pay for articles and programs where appropriate and we hope that readers will enjoy seeing their work published. In turn we hope that other readers will learn from the articles and programs submitted and increase their enjoyment of ATARI computing.

PAGE 6 Atari Users Magazine



LISTINGS

FEATURES

STAGE

REVIEWS

Cover Illustration *Barry Armstrong*

Subscription rates – annual (6 issues)	
U.K.	£ 7.00
Europe	£10.50
Elsewhere – Surface	£10.50
Elsewhere – Air	£16.00

Disk Subscriptions (Magazine and disk)	
U.K.	£30.00
Europe	£37.50
Elsewhere	Please enquire.

Single copies and back issues at one-sixth of the annual rates.

Please make cheques payable to PAGE 6.

How to Type in the Listings

and get them right!

The program listings in PAGE 6 are prepared carefully to ensure that they can be typed in as easily as possible. Before typing any listings ensure that you are familiar with the use of the Shift and CONTROL and INVERSE keys as outlined in your computer manual. The listings are prepared to match exactly what you see on screen. Every character that you may see in a listing is included in the chart below for cross reference. By using TYPO 3 you can ensure that you type in the programs EXACTLY as they are printed. Remember a single typing mistake may mean a program will not run.

WHAT ARE THOSE CODES?

Each line of a program begins with a special two letter code. THESE SHOULD NOT BE TYPED IN. They are used by the program TYPO to check that you have typed each line correctly. IF YOU HAVE NOT ALREADY TYPED IN THE TYPO 3 LISTING PLEASE DO SO NOW. The program can be used as you type in each line of a program or to check an already typed program. The code for each line will match but if you have problems check the listing conventions below carefully, you are most probably typing a CONTROL character incorrectly. TYPO 3 cannot check if a line has been missed so if you have problems in running a listing count the lines in the program and ensure none are missing. If the TYPO codes match and the program still does not run, LIST it to cassette or disk using LIST "C:" or LIST "D:filename", switch off the computer, re-boot and then ENTER the program using ENTER "C:" or ENTER "D:filename". Save this version in the normal way.

HOW TO USE TYPO 3

1. Type in the listing carefully for although you can use TYPO 3 to check itself (see 6 below) it may not work if you have made mistakes.

2. SAVE or CSAVE a copy of the program.

3. Each time you want to type in a program listing RUN TYPO 3 *first*. The program will install a machine code routine in memory and then delete itself. Now type in a line as shown in the magazine *excluding the first two letter code* and press RETURN.

4. A two letter code will appear at the top left of your screen. If this code matches the one in the magazine carry on and type the next line. Note, the code will not match if you use abbreviations. If you prefer to use abbreviations LIST the line you have just typed, move the cursor to that line and press RETURN. The code should now match.

5. If the code does not match, use the editing keys to correct the line and press RETURN again. Repeat if necessary until the codes match.

6. To check a line you have already typed LIST the line, place the cursor on that line and press RETURN.

7. When you have finished a listing just SAVE or CSAVE it in the normal way.

You can type in a program without using TYPO 3 and then check it by SAVEing or CSAVEing a copy of the program, running TYPO 3 and then LOADing or CLOADing your program and proceeding as in step 6 above.

Always SAVE or CSAVE a program before running it and always use TYPO before telling us that a program will not run.

```
EI 1 REM ********************************
AL 2 REM *  TYPO III by Alec Benson     *
         *          June 1985           *
SA 3 REM * A proofreader for ANTIC and *
         *   PAGE 6 based on TYPO II   *
         * published by ANTIC magazine *
EL 4 REM ********************************
SG 100 GRAPHICS 0
WG 110 FOR I=1536 TO 1791:READ A:CK=CK+A:
   POKE I,A:NEXT I
CG 120 IF CK<>30765 THEN ? "Error in DATA
    statements - Check Typing":END
YM 130 A=USR(1536)
VT 140 ? :? "TYPO III is up and running":
   NEW
MA 1000 DATA 104,160,0,185,26,3,201,69
HG 1010 DATA 240,8,200,200,200,192,36,208
QB 1020 DATA 242,96,200,169,79,153,26,3
RK 1030 DATA 200,169,6,153,26,3,162,0
RR 1040 DATA 189,0,228,157,79,6,232,224
TO 1050 DATA 15,208,245,169,93,141,83,6
KC 1060 DATA 169,6,141,84,6,173,4,228
EU 1070 DATA 105,0,141,95,6,173,5,228
BK 1080 DATA 105,0,141,96,6,169,0,162
KK 1090 DATA 3,149,203,202,16,251,96,0
ZR 1100 DATA 0,0,0,0,0,0,0,0
LD 1110 DATA 0,0,0,0,0,0,32,94
JM 1120 DATA 6,8,72,201,155,240,55,230
TV 1130 DATA 203,133,209,138,72,169,0,133
TW 1140 DATA 208,162,8,10,38,208,6,209
MF 1150 DATA 144,7,24,101,203,144,2,230
RL 1160 DATA 208,202,208,239,133,207,24,1
   65
TM 1170 DATA 204,101,207,133,204,165,205,
   101
AW 1180 DATA 208,133,205,165,206,105,0,13
   3
XH 1190 DATA 206,104,170,104,40,96,138,72
NR 1200 DATA 152,72,162,0,134,207,134,208
GF 1210 DATA 160,24,6,204,38,205,38,206
EA 1220 DATA 38,207,38,208,56,165,207,233
TM 1230 DATA 164,170,165,208,233,2,144,4
SK 1240 DATA 134,207,133,208,136,208,227,
   162
CB 1250 DATA 8,165,207,133,204,165,208,6
XN 1260 DATA 204,42,201,26,144,4,233,26
MB 1270 DATA 230,204,202,208,242,133,205,
   169
BC 1280 DATA 128,145,88,200,192,40,208,24
   9
WV 1290 DATA 165,204,105,160,160,3,145,88
QA 1300 DATA 165,205,24,105,161,200,145,8
   8
MQ 1310 DATA 32,69,6,104,160,76,153,6
```

Lower case	Inverse lower	Upper case or Shift	Inverse Upper or Shift	CTRL	Inverse CTRL
1	1	!	!		
2	2	"	"		
3	3	#	#		
4	4	$	$		
5	5	%	%		
6	6	&	&		
7	7	'	'		
8	8	@	@		
9	9	(	(		
0	0	)	)		
<	<				
>	>				
a	a	A	A	├	├
b	b	B	B	│	│
c	c	C	C	┘	┘
d	d	D	D	┤	┤

Lower case	Inverse lower	Upper case or Shift	Inverse Upper or Shift	CTRL	Inverse CTRL
e	e	E	E	┐	┐
f	f	F	F	╱	╱
g	g	G	G	╲	╲
h	h	H	H	◢	◢
i	i	I	I	▗	▗
j	j	J	J	◣	◣
k	k	K	K	▝	▝
l	l	L	L	▘	▘
m	m	M	M	▔	▔
n	n	N	N	▁	▁
o	o	O	O	▖	▖
p	p	P	P	♣	♣
q	q	Q	Q	┌	┌
r	r	R	R	─	─
s	s	S	S	┼	┼
t	t	T	T	●	●

Lower case	Inverse lower	Upper case or Shift	Inverse Upper or Shift	CTRL	Inverse CTRL
u	u	U	U	▄	▄
v	v	V	V	▎	▎
w	w	W	W	┬	┬
x	x	X	X	┴	┴
y	y	Y	Y	▌	▌
z	z	Z	Z	└	└
-	-	_	_		
=	=	|	|		
;	;	:	:	♠	♠
+	+	\	\		
*	*	^	^		
,	,	[	[	♥	♥
.	.	]	]	♦	♦
/	/	?	?		

␛	ESC ESC
↑	ESC CTRL -
↓	ESC CTRL =
←	ESC CTRL +
→	ESC CTRL *
↖	ESC SHIFT CLEAR
◀	ESC DELETE
▶	ESC TAB
⇧	ESC SHIFT DELETE
⇩	ESC SHIFT INSERT
⇦	ESC CTRL TAB
⇨	ESC SHIFT TAB
⇱	ESC CTRL 2
◧	ESC CTRL DELETE
◨	ESC CTRL INSERT

█ INVERSE SPACE

Editorial

RALLY ROUND!

Early September was quite a depressing time for owners of Atari 8-bit computers for the Personal Computer World Show turned out to be the place at which the grave illness of this particular patient became apparent. Many seemed to feel that the illness was terminal. The cause was easily established – neglect. Everyone has known for years that the major U.K. software houses have neglected the Atari but now that malaise has spread to Atari themselves and, worst of all, to the public. If the Atari 8-bit line is to die then it will be a strange irony that the major contributors to its death will be the people who need it most, you and all those other owners who don't support those companies that are continuing to support the Atari.

As reported elsewhere, the representation of the Atari 8-bit products in the 'Atari village' at PCW was dismal but three companies (including ourselves) did show support for the 8-bit Ataris and needed support from the public. Did they get it? I can't speak directly for the others but I know that we fared much worse on the 8-bit side this year than at last year's PCW despite being in a special Atari only area this time. If we did not have ST products available we would have lost heavily and would have decided there and then not to do another exhibition. I suspect that others supporting only the 8-bit computers probably felt the same. If you came along and bought something fine, but if not you must take your share of the blame if some of the exhibitors decide not to bother next time.

The thing I don't understand is that there are at least ten times more 8-bit Ataris in this country than ST's yet the ST commands ten times the interest at the present time. The reason is fairly obvious when you think about it, the 8-bit Ataris are no longer 'new'. They may still be the most powerful, affordable home computers 'for the masses' but they are no longer new and our society clamours after the new. There is of course room for the established alongside the innovative, if the established is good enough which in the case of Atari it is, provided that companies supporting the established line can make a living. A lot of companies who have supported Atari in the past have done so with their hearts leading their heads but at some stage the line has to be drawn. Only you and your hundreds of thousands of Atari owning friends can determine whether this happens.

Enough. You must have the message. If you want companies to keep supporting you, you must support them. There is another Atari Show coming up at the end of November. Make sure that you go along (and take as many non-PAGE 6 reading Atari owners as you can find) and show your support. If you find it disappointing, ask the organisers why they didn't get more 8-bit exhibitors and write to those you know who didn't exhibit and ask them to come along next time. It's a two way process, if Atari owners don't support us, as exhibitors, we just cannot, by the laws of economics continue to support them.

New ST coverage!

STAGE

This issue sees the start of a separate section for the ST which you will find in the centre of the magazine. The reasons are complex and varied but in the end I feel that we can best support both types of Atari owner by going in this direction. We do not intend to neglect either and look forward to receiving as much reader support for STage as we have done, and still do, for PAGE 6 as a whole.

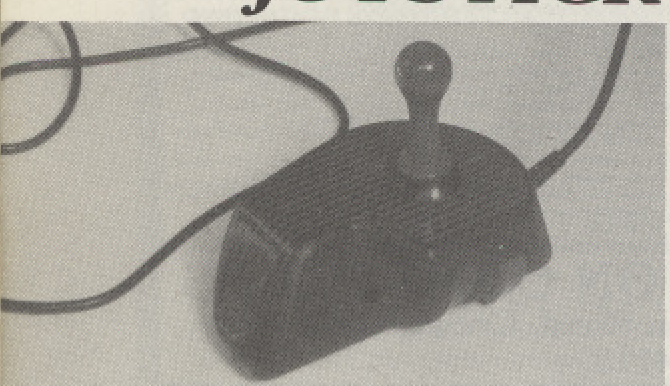
One piece of advice for ST owners, who may want to turn to STage – read the rest of the magazine as well. Many of the software reviews, such as those for Infocom adventures, will be relevant to the ST and you might miss out. 8-bit owners should not neglect STage either (and certainly not, as one correspondent suggested, throw it away!) for you may well decide that an ST would be a welcome present after all. I know for a fact that many of the long term Atari owners own, and use, both machines and rightly so. They will, hopefully, find something of interest from cover to cover.

TRANSATLANTIC BBS

The Birmingham User Group claim a first for a British Atari BBS by going Transatlantic! Messages may be sent to or received from Canada at no extra cost to the user.

Outgoing messages are stored as received and once a week are transferred to a bulletin board in Canada called TASK FORCE. Messages from TASK FORCE BBS are also transferred to CBABBS and the transfer takes place every Saturday morning. There are a number of messages in the Canadian message base from computer fans in Canada, and they would like to get in touch with users in the U.K. Anyone who logs on to CBABBS may reply to these messages, once they have been registered as a user. The telephone number of CBABBS is 021 430 3761.

NEW EPYX JOYSTICK



Software producers Epyx have launched into the peripherals market with the new revolutionary style joystick pictured here. They claim that the stick will increase any gamesters high score and have launched a world wide search amongst users groups to find out how well the stick performs. It is certainly very positive and outperforms any other joystick tried at PAGE 6. Main drawback for some is that it is for right handed players only. Unfortunately we don't know the UK availability or price, but pester your retailer and he should be able to find out.

PAPERCLIP EXPOSED!

If you recall our review of Paperclip in issue 22 you may remember a comment that the review copy did not have the 'special' files on the disk. It seems that it was not the only copy!

Ariolasoft have admitted that the 'Special Version' including various printer was never actually on the disk. James Poole, Technical Consultant for Ariolasoft explains "Due to an error at the duplication stage of this program, the special version was omitted. We apologise for this and ask anyone who has purchased this version to return it to us for immediate replacement."

If you have recently purchased PaperClip and find that programs mentioned in the manual are not on the disk, return it to Ariolasoft, 68, Long Acre, Covent Garden, London, WC2 9JH and they will do the decent thing!

More NEWS ›

Looking hard and long, Les Ellingham really did find Atari software at the PCW Show

It has to be said that the PCW Show 1986 was a great disappointment for 8-bit owners. The Atari 'village' was dominated by the ST and Atari themselves showed little interest in the 8-bit models, devoting more space in fact to the 2600 VCS games machine! Still they did have the long promised **80 column card/printer interface** on show and very good it looked too. No price or availability though. That really was the highlight as far as Atari themselves were concerned.





AROUND THE ATARI VILLAGE

A round up of the Atari village is easy. Only Red Rat Software and 2 Bit Systems were predominantly supporting the 8-bit machines. Red Rat in particular deserve your praise and support for coming into and trying to expand a market that the likes of English Software have deserted. On show were **Technicolour Dream**, **Panic Express**, **Screaming Wings**, **A Day At The Races**, **Freaky Factory**, **Rocket Repairman** and **War Copter** many of which are in the arcade vein. Prices start at £2.99 on cassette and £4.99 on disk. Their forthcoming schedule of releases include **Astro Droid** a space arcade game, a frantic car racing game called **Demolition Derby**, **Escape from Planet X** which is three arcade games in one, a multi screen arcade adventure called **Treasure Island** and two more arcade games, **Dragon's Breath** and **Domain of the Undead**. Clearly Red Rat are now the most predominant Atari 8-bit software house in the U.K.

2 Bit Systems had **Replay** and **Digidrum** on show which were reviewed last issue together with **Midi Master** for any 48k Atari. Featuring an 8 track sequencer and Music Player for AMS files it retails at just £27.50. Also shown was **Percussion Master** a digital drum machine featuring actual digitised sounds to enable you to create your own songs. This retails at £29.95.

LET'S LOOK ELSEWHERE

It was not all gloom and despair outside the Atari village though. In fact there was more 8-bit support outside the Atari area than in, although you had to look hard to find it.

Several companies with established 8-bit products were present such as Activision, Ariolasoft and Llamasoft but amongst the myriad stands were one or two that will be supporting Atari for the first time.

Bubble Bus Software, a long established company for other micros will shortly produce their first Atari title with **Starquake** an arcade adventure on disk or cassette at £12.95 and £7.95 respectively.

Gremlin Graphics had an excellent looking Marble Madness type game entitled **Trailblazer** which should be out soon together with **Footballer of The Year** in which you play an up and coming professional footballer fighting your way to the top. Both are £9.95.

Mastertronic have a couple of new £1.99 titles under their Entertainment USA banner called **Bump, Set, Spike** and **Vegas Poker** whilst Firebird had another budget title called **War Hawk** which one avid arcade freak told me had the best music he had ever heard!

Rainbird are now bringing adventure lovers something they have been crying out for for years, Level 9 adventures on disk! Already available is **Jewels of Darkness** and coming along is **Silicon Dreams** both of which are three adventure compilations of existing Level 9 adventures. Also expect soon the 8-bit version of the much acclaimed ST adventure, **The Pawn**.

Anco Software are marketing **Voice Master** in this country. A speech synthesiser, voice recognition and voice harp hardware add-on that sells for £59.95. Reviews on other machines have been excellent, let's hope that the Atari version lives up.

Tynesoft have now acquired the rights to some of the Scott Adams adventures and will be re-releasing these soon. Savage Island I & II are already available. They are also one of the few converting established Commodore titles to the Atari with **Jet Set Willy I & II** already available. **Camelot** is a multi-level arcade game and **Drawmaster** is another 'ultimate Artist package' for budding Atari artists to look out for. More Atari titles are promised.

From Infocom look out for **Moonmist** an interactive fiction adventure and **Leather Goddesses of Phobos**, the first in a new Comedy adventure line. Only one new title is due from Ariolasoft which is **Touchdown Football** and Mirrorsoft are due to release a new flight simulator, **Spitfire 40**. Blue Ribbon Software are to expand their range of budget titles with **Astro Plumber**, **Diamond Mine II, Bar Billiards, Condition Red, Joey and M-Droid**.

Budget software is all the range and Prism Leisure Corporation seem to specialise in buying out old or deleted titles for budget release. Their trade catalogue features no less than 67 Atari titles!! Some is pretty obscure but many are up to date. If your dealer tells you there is no 8-bit software around, don't believe him.

Finally I picked up an Ocean/Imagine autumn/winter release schedule – not an Atari title in sight!

There *will* be a decent amount of software around in the coming months but I suspect that your retailer will need pestering. Pester him!

STAND UP AND BE COUNTED!

Ask anyone who's just been to the PCW show – the 8-bit Atari is dead!

In the National Hall, you could hunt all day and never even smell an 800XL or 130XE. Never mind, you say, lets go up to the Atari stand, we'll be OK there.

LIKE HELL!!

You would have seen a separate stand exclusively devoted to VCS machines, but 130XE's? Well, there was one – ONE – on the Atari stand, tucked away behind the display cases showing what were said to be the new multi-meg ST's. But that was it. Atari has declared that it will continue to support and develop the 8-bit machines, but the evidence says otherwise.

There is however an old saying along the lines of 'He's dead, but he won't lie down' and this is where YOU come in. If you are an 8-bit Atari user, you have to get off your backside and do something about it! And don't kid yourself – YOU can do something.

Okay, so we're not in the same numbers league as the Spectrum and Commodore 64 owners, but just stop a moment and take a look through the general computer magazines. You'll see new software coming out each month for the MSX and the VIC20! Now there are a couple of machines that really are dead, and yet they are still being supported! Take a look in your local computer shop and see how many systems they support. Do they support the Atari? Why not? Are you honestly going to tell me that you are the only Atari user in your area?

If your local shop doesn't support Atari, ten to one you went in and asked once, got a negative reply, and never asked again. That was where you went wrong. You should go back and ask again – and again and again and again. You must have a friend with an Atari – get him off his backside and in there asking too. Get him to get his friends in there and so on and, eventually, you will have local support for the Atari. So you think it can't be done? Well, you're wrong, we've proved in our home town that it really does work. Two years ago, we would have been lucky to find a couple of bits of Atari software in the whole City. Today, we have three shops with large (and expanding) Atari sections! One of our local shop owners who is a Commodore fanatic now admits he's selling more Atari software than Commodore!

What about the lack of support from the software houses? Again it's up to you. Write to the software houses – ask for an Atari version. When they see there is a market for the Atari, they'll produce it! If you have also badgered your retailer and he asks as well then your argument is reinforced.

Another cry I heard so many times at the PCW show was 'Why don't they do a disk version?' Again, the answer is for YOU to tell the software houses you want one!

The future of *your* machine is in *your* hands – ***It's time to stand up and be counted***. The fact that you are reading PAGE 6 marks you as a dedicated user. If we all shout, we can make a future for our machine. But DO IT NOW! – If all you do is just think about it, it will be too late!

Ken Ward

CALLING ALL ATARI USER GROUPS

Several of the User Groups representatives I met at the PCW show expressed a desire to communicate and exchange information and ideas with other Atari groups.

Can I ask all Atari groups, and any general groups that have an Atari sub-group, to get in touch with me providing details of your group and its contacts. We are looking at the possibility of forming a national association of Atari groups that will benefit every Atari owner in this country.

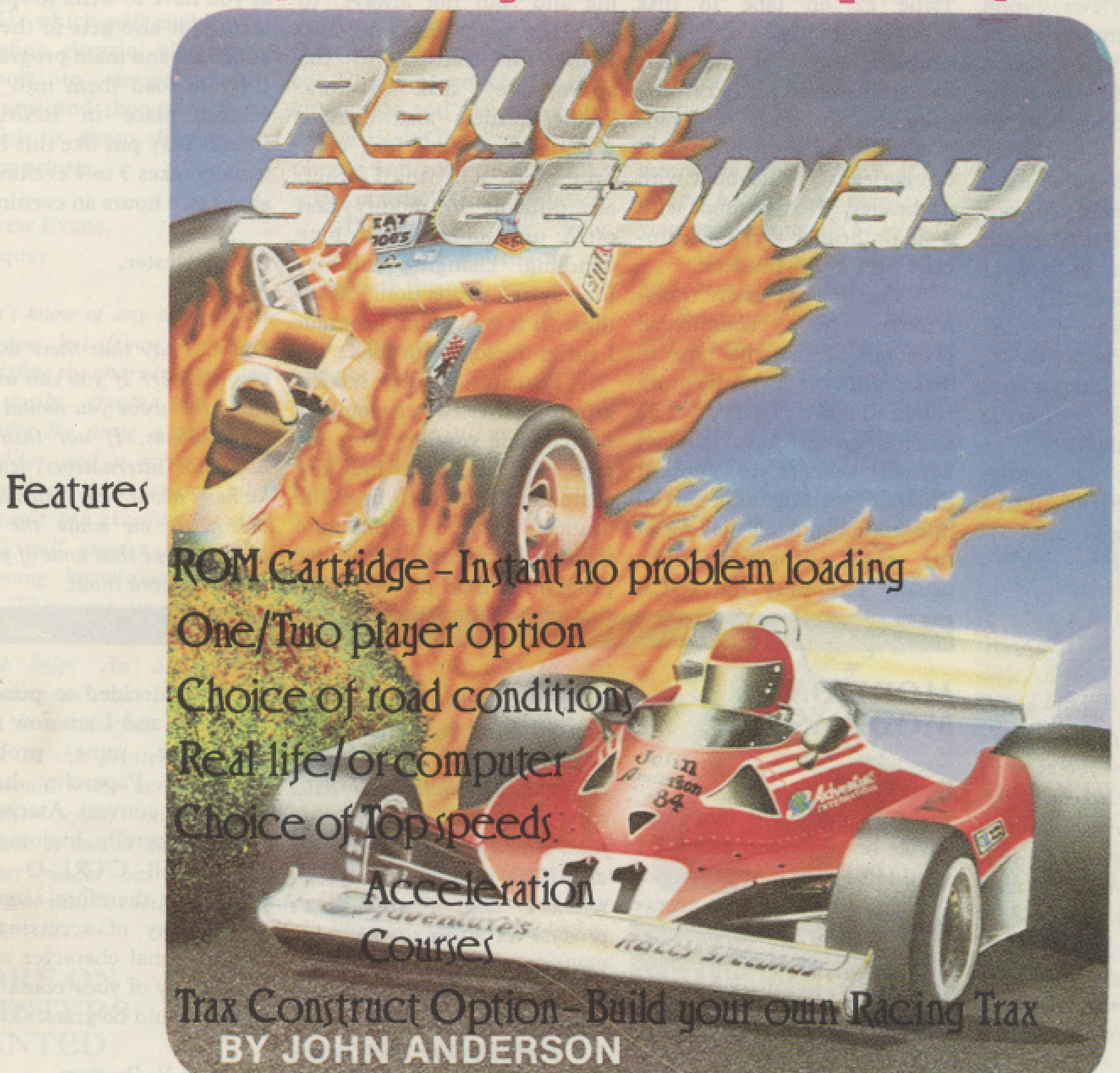
Please write to me now, it's important.

KEN WARD, NORWICH USER GROUP, 45 COLEBURN ROAD, LAKENHAM, NORWICH, NR1 2NZ

Atari Software Bargain of the Year

Rally Speedway ROM Cartridge RRP £34·95
Tynesoft Price £9·95 incl. Postage & Packing

[Fits any Atari Computer]



Features

ROM Cartridge – Instant no problem loading
One/Two player option
Choice of road conditions
Real life/or computer
Choice of Top speeds
Acceleration
Courses
Trax Construct Option – Build your own Racing Trax

Order Form

Initials Surname

Address

TOTAL

Rally Speedway [ ]

Telephone no. (including STD code)

IF YOU WISH TO PAY BY CREDIT CARD
Enter your Access/Visacard no. in the boxes below.
Overseas card holders please enter expiry date in boxes right

Access VISA

Please debit my Access/Visacard by Total amount due Signature

TYNESOFT,
FREEPOST NT 873,
UNIT 3,
ADDISON INDUSTRIAL ESTATE,
BLAYDON, TYNE & WEAR NE21 4TE

Ordering by Phone
Access or Barclay Card Holders can order by telephoning:
(091) 414 4611

KEEP 'EM LONG!

Dear Les,

Just a note to express my support for the comprehensive 'story type' reviews. John Davison's excellent review of Flight Simulator II prompted me to go out and buy the game together with Compute!'s 40 Great Flight Simulator Adventures. The game lived up to all expectations yet prior to reading the review I had not even considered it in view of the cost. I suspect that the Ultima IV review may do the same and a glance at the Going Online article indicates that a modem could also be on the Christmas shopping list.

Any chance of similar treatment for SSI's Wizards Crown which looks interesting, but is it worth the cost?

Colin T. Cooper,
Leigh-on-Sea.

Although I had some reservations about readers interest in some of the longer reviews, we have had several letters like this so, providing our contributors can keep writing them, we'll keep publishing. Many readers complained that the short catchy reviews published in other magazines gave too little information to enable them to judge the worth of a piece of software.

DOS 3 STILL ALIVE!

Dear PAGE 6,

In the past I have seen lots of letters complaining about the DOS 3 system. Is there anything wrong with DOS 3 because I recently bought a 1050 disk drive which comes with DOS 3 and want to know if I should buy a copy of DOS 2.5?

Simon Hall,
Southampton

Yes.

TAPE TO DISK

Dear Les,

I read with interest the letter from B. Hurst of Hull in Issue 22 on tape to disk transfer. I had the same problem and over the years have transferred many cassette programs to disk. These tape programs fall into three main categories. A) Auto-boot with no header, B) Auto-boot with a single header and C) Auto-boot with multi-headers.

The first are easily transferred by commercial programs. I use the tape to disk utility in Adventure International's Diskey. The second group have custom written headers to support program loading and screen information during loading of the main program. They usually customise the IOCB (and even DCB) calling routines and often 'load' using non-standard data blocks. These headers have to be modified to support disk loading and (but not always) to load the main program into RAM for transfer to the appropriate disk sectors. These headers also contain various routines for copy protection. The third group are difficult to modify and often use sophisticated byte handling/ changing routines for extra protection. With these, if it is a 'good' program I suffer the long tape loads.

To cater for the second group I use two Assembler source code routines (one for tape, one for disk) which are customised to load first the header and then (if possible) the main program. The header program is then modified and the main program loaded into RAM. The header and main programs are then transferred to the appropriate sectors on the disk. DOS cannot be used as you have to write to specific sectors, it also gets in the way of header and main program as I try to load them into their correct place in RAM. It sounds easy put like this but it usually takes 3 to 4 evenings at about two hours an evening!

M.S.Silvester,
Aldershot.

Didn't I say that there was no easy answer! If you can understand the above you should have no problems. If not then you have two alternatives, learn a lot more about your Atari or put the kettle on while the tape loads! I hope that some of you at least can work it out.

MORE ON MODEMS

Dear PAGE 6,

Can you give me some advice on buying a modem? I would like to be able to contact a friend in America, access Bulletin Boards and possibly play games such as MUD or GODS. I have seen many American modems advertised in ANTIC and ANALOG but don't know if they would work in Britain. Is the Miracle modem suitable for the above purpose?

Alan Wheatley,
Banffshire

Firstly forget about American modems, they will not work with the British telephone system. Most modems you see advertised in this country will do what you want, the only thing you need to check is whether the support the baud rate you require. Obviously a modem restricted to 300 baud cannot access a system which runs at 1200/75. Many modems, including the Miracle Technology modems, have switchable baud rates. Another point to watch if you want to access Prestel or similar 1200/75 systems is that the 850 interface cannot handle split baud rates so you need another interface. Finally some systems such as MUD may require special software and if they don't produce an Atari version, then you are stuck. You will need to write to the companies concerned to check.

Probably the best system for the beginner is either the WS2000 or WS4000 modem with the Datatari interface and Multi-Viewterm, at least you will have everything you need apart from experience!

ATARIWRITER VS PAPERCLIP

Dear Les,

There has been a lot of correspondence elsewhere concerning accessing the International character set on the 1027 printer with Atariwriter. I had no problem solving this with the CTRL-O function of Atariwriter, however, having read your review I decided to purchase Paperclip and I am now faced with the same problem! Although Paperclip has a utility to convert Atariwriter files to Paperclip, in doing so it ignores all CTRL-O codes and there therefore seems to be no way of accessing the International character set. If you or any of your readers can help I would be grateful.

Maurice R. Pearson,
Caithness

No problem! What you have to do is define your own printer driver using the utility supplied with Paperclip. There are four special keys available for you to use as you wish and you simply define one of these with the commands that you use to use with CTRL-O. Whenever you require the International character set just use the key you have defined in place of CTRL-O. You can even use another key to define the £ sign and have it printed with just one command! Full details of setting up your own printer driver are given in Appendix D of the Paperclip manual.



DESIGNING CIRCUITS

Dear PAGE 6,

Could you tell me if there are any programs for the 800XL which will enable you to define electric/ electronics symbols to design circuit diagrams and then save them on disk or dump them to an Epson printer.

Andrew Evans,
Newquay.

I don't know of any commercial programs, but if you learn how to redefine the character set, you can easily create you own symbols. By using a character set editor and a screen dump utility there is no reason why you can't get excellent results, but it will require some programming knowledge on your part. There are several public domain utilities available which would help. An alternative, depending on what printer you have, is to redefine the characters in the printer although this would make actual design on the screen much more difficult. It can be done, maybe another reader has written a program that exactly fits the bill?

MORE ON PRINTERS WANTED

Dear Les,

I must agree with Alan Horner in Issue 21. I am 60 years old and having bought an 800XL some time ago was horrified by the lack of information given by Atari. I found PAGE 6 at issue 13 and since then it's been so much easier. People like myself have no-one to turn to for help and information, if we were of school age we could turn to teachers or other youngsters with whom we could swap knowledge and learn, but being older we rely on magazines such as PAGE 6.

I have learnt from your reviews and excellent contributors. I am now using a 130XE and Superscript and have bought a 1027 printer. I would have liked a better quality printer but what Interface do I need? What is a Printer Driver? Is it possible that one of our friends who contribute so much for our knowledge and pleasure could advise us on hardware, peripherals and such things with a series of articles?

Thank you for your efforts on our behalf, we do appreciate them.

C.P.Ashmore,
Gosport

There are still many, many things that Atari owners would like to know about as illustrated by this letter. Unfortunately many articles, especially those which advise on and compare different third party products, are extremely time consuming and often difficult to get together. Few people have access to more than one printer. We would love to print comparative articles but don't have the resources to spend a couple of weeks in preparing just one article. If any readers have access to a friendly retailer or the like who could provide information about different printers and they feel confident in writing an accurate and detailed report we would be delighted to publish it. Any offers?

XL TECHNICAL REFERENCE NOTES

Dear PAGE 6,

Could I just ask you one favour? Do you know where I can get a copy of the Technical Reference Notes for the 800XL. I need them for details of the parallel bus, but I have been informed that the book is out of print. So much for Atari's continued support of the 8 bit machines.

Jim Darnill,

I am not sure whether the XL version of the Technical Notes was ever in print! It was certainly mentioned when the XL came out and, whilst certainly prepared for publication, I do not believe that copies were put on sale. The only reference that has been published on the parallel bus as far as I am aware is a four part article in ANTIC which commenced with Vol.3 No.9. If you can get hold of these magazines, your problems should be solved.

As a matter of interest I have been told that the Technical Reference Notes for the 400/800, which are entirely relevant to the XL/XE, have been republished and are available from Atari although they don't seem to be pushing them very much. Ask Atari or your dealer (persistently) if you can buy a copy.



Write to READERS WRITE, P.O. BOX 54, STAFFORD, ST16 1DR

SAFE EARTHQUAKES

Dear Sir,

In the past I have found it quite difficult to shake the screen with text or graphics to create a good earthquake effect, but after reading your articles on Display List Interrupts, I found a short routine to softly or violently shake the screen, so I would like to share it with other readers.

By changing the last digit in the POKE statement, you can change whether the screen shakes very softly or violently.

Mark Bedford,
Warley, W. Midlands

```
BJ 10 GRAPHICS 0:POKE 752,1
HG 15 ? "RESERVED FOR TEXT OR GRAPHIC PIC
   TURE"
SU 20 DL=PEEK(560)+256*PEEK(561)
LG 25 POKE DL+1,21:GOSUB 40
NR 30 POKE DL+1,53:GOSUB 40
SD 35 GOTO 20
EH 40 FOR WAIT=0 TO 30:NEXT WAIT:RETURN
```

ASSEMBLER EDITOR SOLUTION

Several readers responded to Cliff Winship's letter in the last issue about problems of loading an object listing with the Atari Assembler Editor. Many enclosed a copy of a letter from one Matthew Jones of Atari and Matthew himself dropped the information into our Mailbox. So here it is.

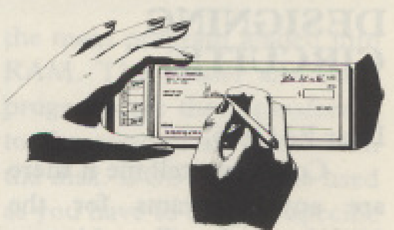
All references to CLOAD in the manual should be replaced with the following program

```
100 TRAP 260
110 OPEN #3,4,0,"C:"
120 GET #3,X
130 GET #3,X
140 GET #3,X
150 GET #3,Y
160 ADSTART=256*Y+X
170 GET #3,X
180 GET #3,Y
190 ADEND=256*Y+X
200 ADCUR=ADSTART
210 GET #3,X
220 POKE ADCUR,X
230 ADCUR=ADCUR+1
240 IF ADCUR<=ADEND
THEN GOTO 210
250 GOTO 140
260 CLOSE #3
270 END
```

The program is presented for ease of understanding but can of course be condensed to a few lines providing the GOTO references are amended.

AUTO CHECK 4·0

Requirements 48k Disk



A CHEQUE BOOK UTILITY PROGRAM

by Peter Franey

Not another cheque book utility! Well bear with me and I hope you will find this one worthwhile. The program started two years ago as an after thought but evolved into quite a comprehensive program. The typing will be hard and the start up procedure will need care, but I assure you, it will be worth it. The main program display alone took many hours of frustration, to get right. If I have wetted your appetite then read on. If you are a cassette user then I apologise, possibly with a program for the future?

PROGRAM OVERVIEW

If you don't want to pay out in excess of thirty pounds for a commercial financial program to handle your cheque book(s) or are tired of six programs and multiple disk swaps then Autocheck 4.0 will come to your rescue. The program started because I bought a copy of the Home Accountant and found that it never displayed my current balance. It was fine keeping records of up to five cheque books and credit cards but the printed reports were average. I cannot imagine why they think the average person needs a net worth statement, after all we are not all jet setters are we?

Autocheck is a stand alone program which handles up to five cheque books, offers sixteen user defined categories for expense and eight for income and provides printer support. Each cheque book may use a different set of categories. All the categories are displayed on the main screen, and the current balance is displayed at all times. Complex multiple file handling allows the program to change from one cheque book to another. The name and number of the current cheque book are displayed on the main screen. Each cheque book file may be used for a different person, but can also be be used for different years on one account. It's up to you how you name them.

As Autocheck is a stand alone program it uses a considerable amount of memory and, fully dimensioned, leaves just 350 bytes free on a 48K machine. When using this program ensure that you do not boot the 850 interface module, if you have one, or there will not be enough memory. If you have a single drive system, configure DOS properly for one drive. From basic Type POKE 1802,1 and press return. Then return to DOS and format a disk and dump the DOS files to it. When you boot this disk your system will be configured for one drive, which will give 32402 free with DOS 2.0 and slightly more using DOS 2.5. This will ensure that the program will run. I have used Autocheck using the default value at location 1802 but I recommend the precaution anyway.

A new disk will be required as Autocheck will take up 173 sectors, and the following for each cheque book – Cheque book name data 1 sector, cheque book categories 2 sectors, and the main data file 77 sectors. A single disk will hold the program and all the data files for the five cheque books. All together 573 sectors will be used.

Listing on page 17

GETTING STARTED

Type in Autocheck, but when using TYPO 3 set the left margin to zero. (POKE 82,0-RETURN). Unfortunately due to memory constraints some of the lines in the program will seem rather large. I have been through the listing and reduced those that I could in size. There were some that I could not reduce. This mainly concerns lines 7900 and 7907. These must be typed in using abbreviations and leaving no spaces within statements, don't worry, BASIC will insert the spaces itself. For example a POKE statement can be entered (POKEQ286,Q64) or GOTO and GOSUB ...(GOSUB7905:GOTO7930). Please bear in mind that the TYPO 3 code will not match if an abbreviation is used or spaces missed out, but this is only for one or two lines. Anyone not using an Epson compatible dot matrix printer will not have to worry about line 7900 as an alternative is offered in listing 3.

If you have an Epson compatible dot matrix printer such as FX80 or RX80 then type in the main program as it is. If you have a non-Epson 80-column printer type in listing 3 in place of the lines in listing 1. If you have only a 40-column printer, type in listing 2, substituting the lines for those in listing 1. Do not enter the REM lines and leave out the lines indicated by the REM lines.

When the typing is finished save Autocheck to the disk as D:CHECK. Then save a backup copy on another disk.

CREATING DATA FILES

We now have to create all the data files before we can use the program. When this is completed Autocheck will automatically load all the data for the last cheque book used, each time it is run.

Step 1 – type 'RUN' and press return. Error 170 will appear.

Step 2 – type 'CLOSE #2' and press return.

Step 3 – type 'BK = 1' and press RETURN.

Step 4 – type 'GOSUB 11010:GOSUB 9900:GOSUB 580' and press RETURN again.

Eventually 'SAVING DATA' will appear. When the operation is completed the screen will revert to normal and you can then RUN the program again. This time 'LOADING DATA' will appear. This will now happen every time the program is run. The main screen of Autocheck will now appear.

continued on page 14

MAIN SCREEN DISPLAY

The upper part of the screen shows the categories. There are two rows of expense categories on the left and one row of income on the right. The categories are marked with letters of the alphabet and the spaces by them are blank, because we have not defined any categories yet. The middle section shows the cheque entry display, this will also be used for editing cheques. The current balance is shown on the bottom right of the screen. At present it will show '0.00'. The very bottom of the screen is the command area.

DEFINING THE CATEGORIES

The first task for setting up is to enter the expense and income categories, A to P and Q to X respectively. Although all of the categories may be changed at any time, it is not a good idea to change a name after you have made entries in a particular category. Give the category names careful thought before any cheque details are entered. Press 'R' from the main screen to select categories. The prompt at the bottom now gives the choice of edit or display by category. Select the edit option. An inverse video bar in the command area now asks for the category letter. The options also exist here to press 'Y' erase or 'Z' exit. Examine the screen and press the one of your choice. If you press a category letter a horizontal bar now appears to the right of the letter chosen, to show the field length, which is ten characters. The cursor is on the left of the field. Make the entry required. To leave a category blank, press RETURN only. If you make a mistake press the back space key and your entry will be erased. You may also choose the erase option to erase any single category or to erase them all. When entering categories remember 'A' to 'P' are expense and 'Q' to 'X' are income.

Make sure that you do not enter two categories with exactly the same name even if one is income and the other expenditure otherwise, when using the search routines the program will retrieve both. After the entry is completed another category may be entered. Type 'Z' to exit.

You will now be asked if you wish to permanently save the categories. Type 'Y' to save them to disk. If you are starting a new cheque book you do not need to save these categories now, as they will be saved automatically by another part of the program after entering details for the new cheque book. The display mode for categories will be covered after cheque entry, as obviously there is nothing to display until entries are made. If you chose 'Y' or 'N' to saving the categories, the main prompt will re-appear in the command area of the screen.

STARTING A NEW CHEQUE BOOK

Once the categories have been entered item 'Z' can now be chosen from the main prompt. The display now gives the titles and numbers of all five cheque books. At present they will all be blank, as will the current cheque book. Select item number 6 – Start New Cheque Book. The first screen gives the opportunity to return to the main screen without any further action, this is because if you have just finished working on this file it will be erased when a new one is created. If you have worked on a file, save it to disk before starting a new one. Refer to the cheque entry mode for saving data files. Press 'C' to continue. The cheque book number must now be entered. If you are just starting up here you must press '1' although any number will be accepted at this stage. Next enter the cheque book title with up to fifteen characters and press RETURN. The program next asks for starting balance. Enter any figure positive or negative between -99999.99 and 999999.99. If the figure is positive never enter a plus sign either here or anywhere else in the program. Press RETURN after your entry. All the data for this cheque book will now be saved to disk. If you have made a mistake with your entries here you will have to select re-start current cheque book. Please also bear in mind that you will not be able to select a cheque book number which is already in use. You must change to the cheque book so that it is the 'current cheque book' and must then select the restart option – see the 'Re-start cheque book' description for more details.

Once you have defined your first cheque book and the data has been saved to disk the program will return to the main screen and the main prompt. Your current balance is displayed and you are ready to start entering cheques.

ENTERING CHEQUES

I have included cheque entry next as logically it will be what the first time user wants to do next. Firstly I must point out that you are restricted to 200 entries per cheque book, and the program does not check for a full file, so take care! The print routines can give an idea of the number of entries, but that is covered later. From the main screen and prompt press 'C' for cheques but first a word of warning. Although I have spent many hours debugging the program and trapping errors, I advise that a certain amount of care is used on this part of the program. I have not, for example, disabled the break key. (If you do accidentally break the program, clear the screen, type GOTO 100, and press RETURN. This should help to recover the situation.) The next prompt shows that the 'mode' is cheques. This kind of information will always help as to where exactly you are in the program. The prompt shows that the next choice is between Entry and Search/Edit. Study this display for a few seconds as the Search/Edit choice gives a new range of options. We will come back to Search/Edit later, but for now press 'A' for the 'add cheques' mode. The mode will now have changed to 'add cheques'. Again study this prompt, it is the one that Autocheck will always come back to after entering a cheque. It also gives the option to save the data file to disk. Use this option when you have finished adding cheques to your file. This save routine also saves your current balance, so don't forget to use it. Press 'A' to add a cheque. The command area of the screen will now clear and 'PAYEE' will appear. Press any letter or number key to start making your entry. Enter up to fifteen characters. If you make a mistake press the back space key and your entry will be erased, giving the chance to re-enter. Please note the arrow keys will not work. If the entry is less than the full field then press RETURN. If you type the last character in the field Autocheck will assume that you have entered it correctly and move to the next field. The command area will now display 'DATE (MMDDYY)' indicating that six digits must be entered. For example the 25th January 1985 would be entered '012585'. If you try to enter a letter here or enter less than six characters Autocheck will beep and refuse the entry, otherwise the entry format is the same. Autocheck will also check for valid month and day entries. All the fields will assume correct entry if the last character in the field is typed, so long as it and the characters before it are allowed. The cheque entry routine also automatically sorts the entries into date order. This means that if there is cheque from the past which you have forgotten to enter, you can still enter it as the program will automatically put it in the right place. Bear in mind though that if you already have several months of data in the file, that Autocheck will take a few seconds to find the right place for an old entry, especially if it is in the first month of your records. A word of caution here though, and that is that the

program is only designed for sorting or searching entries from the same year. You may not overlap from one year to the next. In this case you must restart the cheque book for the new year, or start a new one if you want a separate record for each year.

Enter the category by pressing the appropriate letter key. The cheque number should be entered next. The last cheque number will be displayed. Press RETURN for the last number + 1 to be entered by the program, or enter the number manually. You may enter from one to six digits. Only numbers will be accepted. Enter the amount from 0 to 999999.99. There is no need to enter the decimal point where there are no pence as the entry is formatted to two decimal places. Ensure that you do not enter the decimal point twice or more than two decimal places for the pence, or the program will crash. Autocheck will next ask if the entries are correct. If you press 'Y' the current balance will be adjusted and the program will return to the cheque entry mode. If you press 'N' the screen will go blank and the program will return to main screen and prompt after one or two seconds. If you answered 'Y' to enter a cheque then you may repeat the process by pressing 'A' again or save the file by pressing 'S'. If you answered 'N' you will have to access the cheque entry mode again.

RE-STARTING A CHEQUE BOOK

Press 'Z' from the main prompt. The screen shown now is again the list of cheque books. Ensure that the display shows that the current cheque book is the one that you wish to re-start. If it is not then you will have to use the change check books option. Once satisfied press '7'. You will now have to re-enter the cheque book name and your new starting balance. The current data file will be erased and a blank one saved to disk. when the operation is completed Autocheck will return to the main screen.

CHANGING CHEQUE BOOKS

This option is again accessed by first pressing 'Z' from the main prompt. The cheque book list is now displayed. Select the cheque book to change to by simply pressing its number. If the cheque book number chosen has not been used, or in other words if it does not yet have a title, then Autocheck will ignore your selection. If your choice is accepted then you will be given the option of saving the current file first, as it will be lost when the new one is loaded in. When the operation is completed the program will return to the main screen.

DISPLAYING CHEQUES BY CATEGORY

Press 'R' for categories from the main prompt. The command area now shows the mode as categories. The choice is given to 'E'-Edit or 'D'-Display. Press 'D' and an inverse video bar will now be displayed. Autocheck now expects a category letter to be pressed or 'Y' for all. Here an expense or income category may be selected. The display will now clear and show the category selected at the top of the screen. The items found will be displayed in the middle area of the display. The current balance is shown at the bottom of the screen. If the end of the search is reached or the screen is filled, the running totals for expense and income items found will also be displayed. If you choose all categories then both figures will show something. If you choose a single category then, depending on whether it was for expense or income, the one figure will be the total for that category and the other will show zero. If the display is filled then press the option key to continue. The totals will be updated for each screen.

Press the start key to return to the main screen and prompt.

DISPLAY CHEQUES BY PAYEE OR DATE

This part of the program is accessed by selecting cheques mode from the main prompt. Press 'C' from this prompt and then select 'S' for search/Edit options. The mode now shows 'Search Edit'. Remember I said that keeping an eye on the mode will give you a good idea as to where you are in the program. I think that you will begin to see why now. I should also point out that I deliberately did not place the category search routines here, because I felt that it would be simpler if all the category functions were together. After selecting 'S' the choice is now Edit/Delete for which 'E' should be pressed or Search 'S'. For the moment press 'S', we will come back to Edit delete in the next in a while. Another choice offers 'P'-Payee or 'D'-Date. Notice that the mode has now changed to 'Cheque search'.

For 'payee' enter any number of characters up to fifteen. All the information corresponding to your entry will be displayed. The greater the number of characters entered the more specific will be the search. Here a running total will also be shown, but this will be for expense only.

For searching by date, enter a six digit number, as described earlier. Pressing RETURN only for the first date will default to the first date in the file. RETURN only for the second date will default to the last date in the file. All entries on or between the two dates will be displayed together with a running total for expense only.

EDITING OR DELETING CHEQUES

This option is chosen from the Search/Edit cheques mode by pressing 'E'. The mode will change to Edit cheques. Autocheck next expects a category letter selection in order to start a search. Press the letter of your choice. When an entry is found all the details will be displayed in the correct boxes of the main screen. Press START to delete the entry, OPTION to continue the search or SELECT to edit the entry.

If you choose to delete the entry Autocheck will carry out your wishes and adjust your current balance. Autocheck will also close the gap in the file and after several seconds resume the search.

If you chose to continue, the next entry found will be displayed, giving the same options again. If no more entries are found then end of file will be displayed, in which case you must press START to return to the cheque edit mode.

The editing option allows all the entries to be entered again. You may not press RETURN to keep a field, but must type over it even if it is the same. Unfortunately memory considerations do not allow full editing features. If you are entering something different in a field then you may end it with a RETURN, and Autocheck will ignore anything left in the box from the old entry. The current balance will be adjusted by considering both the old and new entries and the program will return to the main screen.

PRINTER SUPPORT

To display the printer option menu press 'P' from the main screen and prompt. The display will change to a different design and colour. At the top the printer type is shown together with the starting balance, while at the bottom the current balance and the last total found are displayed. The middle of the screen shows the options. Press 'E' to return to the main screen.

The category search option, accessed by pressing 'A' 

from the printer menu, will require a single letter key press. All the entries found will printed and a total given for expense and income. The page length is set at 60. If this is reached then sub-totals will be printed and Autocheck will pause giving the opportunity to position the paper for the next page, and continue printing or exit. You may alter the page length by altering the value of PL in line number 10. The program must then be re-saved to disk to make this change permanent. The page length value is used in all of the print routines in Autocheck.

Press 'B' for the search routines. The next choice given is between 'Payee' and 'Date'. These searches are along similar lines to those in the cheque mode of the program. For payee any number of characters up to fifteen may be entered. Pressing return only for DATE1 and DATE2 gives the default values of the first entry and the last entry in the file. Six digits must be entered for the date. During printing page length will be followed and totals given for income and expenditure.

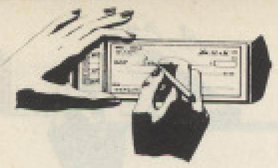
Pressing 'C' will print your own personal statement for the current cheque book. Near the top of the screen the program will ask if you wish to enter a new starting balance before printing. This offers the option of seeing how a different starting balance would affect your current balance. This entry only affects this particular print out and your starting balance will not be altered permanently. Before printing commences, Autocheck will examine the file to give the number of pages based on the current page length. When this is completed the current page length will be displayed. Autocheck will also display the number of pages of entries found in the records. The last page will be only partially filled. Enter the page number required and press RETURN, or press RETURN only for the whole file. The page option is given because if you have several pages, you may only require the most recent one printed, especially if you already have a print out of the whole file. For example, if Autocheck shows two pages the most recent entries will be on page two. If you now select page two for printing Autocheck will scan the file updating your current balance. Only when the page you have selected is reached, will printing start. This means that the current balance shown at the base of the most recent page will be up to date. The printed copy itself takes the form of a statement with the amount of the cheque printed with other details. Your current balance less the cheque amount is printed in the far right column, next to the amount. Any income will be added to your balance. The forty column print out only includes the month and date, not the year. Only the first 13 characters for the Payee are printed. These changes and those in the other printer routines are to allow for fewer columns. The eighty column format is as described. Epson printers will print in condensed/enlarged print.

ACKNOWLEDGEMENTS

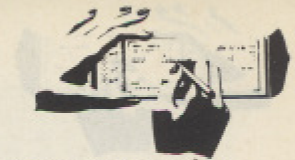
All the coloured screens were designed using 'Multicolour screen generator' by Richard J. Kalagher, first published in ANALOG magazine issue number twelve. My only comment is a big thank you to Richard, it is a very useful utility.

AUTOCHECK is a long listing – be prepared! Also available ready to run on Issue 24 disk – see page 78

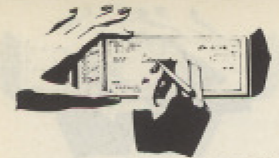
```
VR 1 REM ********************************
         *          AUTOCHECK           *
         *       by Peter Franey        *
JD 2 REM * ---------------------------- *
         *  PAGE 6 MAGAZINE - ENGLAND   *
         ********************************
BP 3 Q0=0:Q1=1:Q2=2:Q4=2000:Q7=3:Q8=8:Q9=9:Q10=10:Q11=11:Q12=12:Q13=13:Q14=14:Q15=15:Q16=16:Q17=17:Q18=18:Q19=19:Q20=20
UW 4 Q23=9000:Q24=24:Q25=7000:Q27=9010:Q28=28:Q29=23:Q31=4:Q32=5:Q33=6:Q35=7:Q36=30:Q37=29:Q41=5000:Q45=44:Q46=32:Q55=27
UH 5 Q64=64:Q65=65:Q66=66:Q68=68:Q78=78:Q80=5080:Q81=80:Q83=83:Q89=89:Q99=99:Q100=100:Q111=110:Q192=192:Q200=1200:Q201=200
EW 6 Q210=210:Q279=53279:Q286=54286:Q340=340:Q715=1714:Q726=1726:Q728=1728:Q730=1730:Q735=1735:Q749=1749:Q750=1750
JJ 7 Q22=22:Q56=56:Q752=752:Q753=1752:Q755=755:Q900=7900:DIM U$(Q15)
WW 10 PL=60:Q69=69:POKE 82,Q0:DIM A$(240),B$(Q20),DATE$(Q200),Z$(Q9),PAYEE$(3000),PAY$(Q15),Q$(Q9):Q$="     .00"
HR 15 DIM NO$(Q200),CAT$(Q4),Z1$(Q9),CAT1$(Q10),F$(Q14),C$(Q9),AM$(1800),BAL$(Q10),BAL1$(Q10),BAL2$(Q10):BAL$="      .00"
GO 16 PAYEE$(Q1)=" ":PAYEE$(3000)=" ":PAYEE$(Q2)=PAYEE$:DIM S$(Q100),CE$(Q201),FLAG$(Q10),BK$(75)
MD 18 NO$(Q1)=" ":NO$(Q200)=" ":NO$(Q2)=NO$:DATE$=NO$:A$(Q1)=" ":A$(240)=" ":A$(Q2)=A$
WZ 19 CAT$(Q1)=" ":CAT$(Q4)=" ":CAT$(Q2)=CAT$:AM$(Q1)=" ":AM$(1800)=" ":AM$(Q2)=AM$:CE$=CAT$(Q1,Q201)
AI 20 BK$(Q1)=" ":BK$(75)=BK$:BK$(Q2)=BK$
ZJ 30 GOSUB 11000:F$="D:CHQ":F$(6)=STR$(BK)
ZN 32 F$(LEN(F$)+Q1)=".DAT":GOSUB 650:GOSUB 40:GOTO Q100
YH 40 F$="D:CAT":F$(6)=STR$(BK):F$(LEN(F$)+Q1)=".DAT"
AE 42 CLOSE #Q2:OPEN #Q2,4,Q0,F$:FOR I=Q1 TO 6:INPUT #Q2;S$:A$(40*I-39,40*I)=S$:NEXT I:CLOSE #Q2:RETURN
VS 100 GRAPHICS Q0:POKE Q752,Q1:POKE 559,Q0:GOSUB 30000
RD 110 POKE 710,4:POKE 709,14:POKE 559,Q0
RN 120 POSITION Q0,Q0:? " Expense A>P CATEGORIES     Q>X INCOME ":POSITION Q0,Q9:? " Payee               Date      Category";
LU 122 POSITION Q0,Q10:? "╔══════════════════╗ ╔═══════╗ ╔═════════╗";
QB 123 POSITION Q0,Q11:? "║                  ║ ║       ║ ║         ║"
VB 126 POSITION Q0,Q12:? "╚══════════════════╝ ╚═══════╝ ╚═════════╝":POSITION Q0,Q13:? " Check No    Amount    Type"
MQ 132 POSITION Q1,Q14:? "╔═══════╗  ╔═══════╗ ╔═════════╗":POSITION Q1,Q15:? "║       ║  ║       ║ ║         ║"
TN 136 POSITION Q1,Q16:? "╚═══════╝  ╚═══════╝ ╚═════════╝":POSITION Q0,Q17:? " Previous Amount  Check No  Balance"
PU 142 POSITION Q2,Q18:? "╔═════════╗ ╔═══════╗ ╔═══════════╗":POSITION Q2,Q19:? "║         ║ ║       ║ ║           ║"
NY 146 POSITION Q2,Q20:? "╚═════════╝ ╚═══════╝ ╚═══════════╝":BAL2$=STR$(BAL):GOSUB Q80:POSITION Q28,Q19:? BAL2$
ZJ 147 POSITION Q0,21:? "ACCOUNT NO: ";BK;:POSITION 24,21:? BK$(Q15*BK-Q14,Q15*BK);
FD 150 POSITION Q14,21:? " COMMAND ":GOSUB 170:GOTO Q210
JQ 170 FOR I=Q1 TO Q24:IF I<Q9 THEN POSITION Q0,I:? CHR$(Q64+I);".":POSITION Q2,I:? A$(Q10*I-Q9,Q10*I);"|"
PB 180 IF I>Q8 AND I<Q17 THEN POSITION Q13,I-Q8:? CHR$(Q64+I);".":POSITION Q15,I-Q8:? A$(Q10*I-Q9,Q10*I);"|"
VD 190 IF I>Q16 AND I<=Q24 THEN POSITION 26,I-Q16:? CHR$(Q64+I);".":POSITION Q28,I-Q16:? A$(Q10*I-Q9,Q10*I);"|"
MI 200 NEXT I:RETURN
DN 210 POSITION Q7,Q22:? "C-Cheques R-Categories P-Printer";:POSITION Q2,23:? " Z-RESTART/CHANGE/RE-DEFINE      ";
HV 220 POKE 559,34:GOSUB Q23:IF N<>67 AND N<>82 AND N<>Q81 AND N<>90 THEN 220
HJ 230 IF N=90 THEN 9600
QE 235 IF N=Q81 THEN GOTO Q25
XO 240 GOSUB Q27:Z$=CHR$(N):IF Z$="C" THEN GOTO Q4
GB 250 POSITION Q10,Q22:? "MODE:Categories";:POSITION Q2,Q29:? "A-Edit Categories D-Display  E-EXIT";
WW 270 GOSUB Q23:IF N<>Q65 AND N<>Q68 AND N<>Q69 THEN 270
JF 285 IF N=Q68 THEN 6000
OD 290 IF N=Q69 THEN GOSUB Q27:GOTO Q210
PX 300 GOSUB Q27:POSITION Q8,Q22:? "Edit categories";:POSITION Q1,Q29:? "Enter Letter (A-X) (Y-ERASE or Z-EXIT)";
AA 310 GOSUB Q23:IF N<Q65 OR N>90 THEN 310
MU 330 IF N=90 THEN 400
UI 332 IF N=Q89 THEN GOSUB Q27:GOSUB 8300:GOTO 300
XO 335 PP=5:POKE Q752,Q0:GOSUB Q340:GOTO 365
SN 340 R=N-Q64:IF R<Q9 THEN X=Q2:Y=R
UY 350 IF R>Q8 AND R<Q17 THEN X=Q15:Y=R-Q8
DV 360 IF R>Q16 AND R<=Q24 THEN X=Q28:Y=R-Q16
ZR 362 RETURN
CN 365 XX=X:YY=Y
KO 370 POSITION X,Y:? "__________←←←←←←←←←←";
DL 380 GOSUB 9500:POSITION X,Y:? "          ";:A$(R*Q10-Q9,R*Q10)="          ":A$(R*Q10-Q9,R*Q10)=B$:B$=""
GK 390 POKE Q752,Q1:GOSUB 170:GOTO 300
PB 400 GOSUB Q27:POSITION Q2,Q29:? "Permantly alter categories (Y/N)     ";:GOSUB Q23
AJ 410 IF N<>Q78 AND N<>Q89 THEN 400
MQ 420 IF N=Q78 THEN GOSUB Q27:GOTO Q210
KC 560 POKE 54286,Q64:POKE 559,Q0:GOSUB 9900:POKE Q752,Q1:POKE 54286,255:GOTO Q111
UL 580 GRAPHICS Q2+Q16:COLOR Q1:POSITION Q33,Q31:? #Q33;"saving":POSITION Q35,Q33:? #Q33;"DATA"
JF 590 F$="D:CHQ":F$(Q33)=STR$(BK):F$(LEN(F$)+Q1)=".DAT":CLOSE #Q2:OPEN #Q2,Q8,Q0,F$
BE 600 FOR I=Q1 TO Q12:S$=DATE$(Q100*I-Q99,Q100*I):? #Q2;S$:S$="":S$=NO$(Q100*I-Q99,Q100*I):? #Q2;S$:NEXT I
XI 610 FOR I=Q1 TO Q18:S$=AM$(Q100*I-Q99,Q100*I):? #Q2;S$:S$="":NEXT I
BQ 620 FOR I=Q1 TO Q20:S$=CAT$(Q100*I-Q99,Q100*I):? #Q2;S$:S$="":NEXT I
OH 630 FOR I=Q1 TO Q36:S$=PAYEE$(Q100*I-Q99,Q100*I):? #Q2;S$:S$="":NEXT I:? #Q2;BAL:? #Q2;NO:? #Q2;BAL1:? #Q2;RR
KZ 635 FOR I=Q1 TO Q2:S$=CE$(Q100*I-Q99,Q100*I):? #Q2;S$:NEXT I
PW 640 CLOSE #Q2:RETURN
GB 650 GRAPHICS Q2+Q16:POSITION Q32,Q31:? #Q33;"loading":POSITION Q33,Q33:? #Q33;"DATA":CLOSE #Q2:OPEN #Q2,Q31,Q0,F$
LZ 670 FOR I=Q1 TO Q12:INPUT #Q2;S$:DATE$(Q100*I-Q99,Q100*I)=S$:INPUT #Q2;S$:NO$(Q100*I-Q99,Q100*I)=S$:NEXT I
ZZ 680 FOR I=Q1 TO Q18:INPUT #Q2;S$:AM$(Q100*I-Q99,Q100*I)=S$:NEXT I
IU 690 FOR I=Q1 TO Q20:INPUT #Q2;S$:CAT$(Q100*I-Q99,Q100*I)=S$:NEXT I
GW 700 FOR I=Q1 TO Q36:INPUT #Q2;S$:PAYEE$(Q100*I-Q99,Q100*I)=S$:NEXT I:INPUT #Q2;BAL:INPUT #Q2;NO:INPUT #Q2;BAL1
LS 705 INPUT #Q2;RR:FOR I=Q1 TO Q2:INPUT #Q2;S$:CE$(Q100*I-Q99,Q100*I)=S$:NEXT I
PR 710 CLOSE #Q2:RETURN
MB 712 GOSUB Q27:POSITION Q10,Q22:? "MODE:Search/Edit";:POSITION Q8,Q29:? "Edit/Delete Search";
ZE 714 GOSUB Q23:IF N<>Q69 AND N<>Q83 THEN 714
FI 715 IF N=Q83 THEN 1110
WS 716 GOSUB Q27:POSITION Q10,Q22:? "MODE:Edit cheques";:POSITION Q31,Q29:? "CATEGORY (A-X)";
WV 740 GOSUB Q23:IF N<Q65 AND N>88 THEN 740
JH 760 GOSUB Q340:FLAG$=A$(Q10*R-Q9,Q10*R):POSITION Q31,Q29:? "              ";
LW 780 GOSUB 7995:FOR CH=Q1 TO Q201:IF DATE$(Q33*CH-Q32,Q33*CH)="      " THEN 830
OB 790 IF FLAG$=CAT$(Q10*CH-Q9,Q10*CH) THEN GOSUB 880
TU 830 NEXT CH:GOSUB Q27:POSITION Q14,Q22:? "END OF FILE";:POSITION Q14,Q29:? "<START>EXIT";
XR 850 IF PEEK(Q279)<>Q33 THEN 850
DH 860 GOSUB Q27:GOTO Q4
FV 880 POSITION Q1,Q11:? PAYEE$(Q15*CH-Q14,Q15*CH):POSITION Q20,Q11:? DATE$(Q33*CH-Q32,Q33*CH)
OB 882 POSITION Q37,Q11:? CAT$(Q10*CH-Q9,Q10*CH):POSITION Q2,Q15:? NO$(Q33*CH-Q32,Q33*CH)
AX 890 POSITION Q14,Q15:? AM$(Q9*CH-Q8,Q9*CH)
YS 900 POSITION Q0,Q29:? "<START>DELETE <OPTION>CONT <SELECT>EDIT";
RE 910 IF PEEK(Q279)=Q7 THEN GOSUB 7995:RETURN
BM 920 IF PEEK(Q279)=Q33 THEN GOSUB Q27:GOSUB 980:GOSUB 7995:RETURN
AL 930 IF PEEK(Q279)=Q32 THEN RR=CH:POP :CH=99.99:GOTO 2106
PJ 940 GOTO 910
DU 950 IF R>Q0 AND R<Q17 AND CH<>99.99 THEN 965
YG 951 IF R>Q0 AND R<Q17 AND CH=99.99 THEN 960
CX 952 IF R>Q16 AND R<25 AND CH<>99.99 THEN 960
OC 953 IF R>Q16 AND R<25 AND CH=99.99 THEN 965
ZX 960 BAL=BAL+VAL(AM$(Q9*RR-Q8,Q9*RR)):GOTO 970
ER 965 BAL=BAL-VAL(AM$(Q9*RR-Q8,Q9*RR))
ZT 970 RETURN
QX 980 IF R>Q0 AND R<Q17 THEN BAL=BAL+VAL(AM$(Q9*CH-Q8,Q9*CH))
BE 982 IF R>Q16 AND R<25 THEN BAL=BAL-VAL(AM$(Q9*CH-Q8,Q9*CH))
IN 985 RR=CH:FOR I=RR TO Q201:IF I=Q201 O
```



```
R DATE$(Q33*I-Q32,Q33*I)="        " THEN
 X=I-Q1:GOTO 1050
ZL 990 PAYEE$(Q15*I-Q14,Q15*I)=PAYEE$(Q15
 *(I+Q1)-Q14,Q15*(I+Q1)):NO$(Q33*I-Q32,
 Q33*I)=NO$(Q33*(I+Q1)-Q32,Q33*(I+Q1))
SA 1010 CAT$(Q10*I-Q9,Q10*I)=CAT$(Q10*(I+
 Q1)-Q9,Q10*(I+Q1)):AM$(Q9*I-Q8,Q9*I)=A
 M$(Q9*(I+Q1)-Q8,Q9*(I+Q1))
UE 1030 DATE$(Q33*I-Q32,Q33*I)=DATE$(Q33*
 (I+Q1)-Q32,Q33*(I+Q1)):CE$(I,I)=CE$(I+
 Q1,I+Q1):NEXT I
YR 1050 PAYEE$(Q15*X-Q14,Q15*X)="
      ":NO$(Q33*X-Q32,Q33*X)="        "
 :CAT$(Q10*X-Q9,Q10*X)="         "
WY 1080 AM$(Q9*X-Q8,Q9*X)="        ":DATE$(
 Q33*X-Q32,Q33*X)="      ":CE$(X,X)=" "
 :GOSUB Q27
TS 1090 BAL2$=STR$(BAL):GOSUB Q80:POSITIO
 N Q28,Q19:? BAL2$:CH=CH-Q1:RETURN
KV 1110 GOSUB Q27:POSITION Q8,Q22:? "MODE
 :Cheque search";:POSITION Q12,Q29:? "P
 -Payee Date";
OH 1130 GOSUB Q23:IF N<>Q81 AND N<>Q68 TH
 EN 1130
IZ 1132 ? "K":POSITION Q0,Q0:? "NO: ";BK;
 " ";BK$(Q15*BK-Q14,Q15*BK);" SEARCH"
CB 1134 IF N=Q81 THEN ? :? "     ENTER PAY
 EE"
VM 1136 XX=Q14:YY=Q9:X1=Q15:IF N=Q68 THEN
  ? :? "[RETURN]-1ST RECORD [RETURN]-LA
 ST RECORD"
WA 1140 CZ=N:IF N=Q81 THEN POSITION Q8,Q9
 :? "Payee ";"_______________++++++++++
 +++++";:PP=Q1:GOSUB 9500:S=LEN(PAY$)
WX 1145 IF N=Q81 AND S=0 THEN 1110
DD 1150 IF N=Q68 THEN YY=Q10:POSITION Q8,
 Q10:? "Date1:";:PP=Q2:GOSUB 9500:IF LE
 N(Z$)=Q0 THEN Z$=DATE$(Q33*Q1-Q32,Q33*
 Q1)
IH 1155 N=CZ
RW 1160 IF N=Q68 THEN YY=Q11:GOSUB Q27:PO
 SITION Q8,Q11:? "Date2:";:PP=Q7:GOSUB
 9500:N=CZ
KY 1162 IF N=Q68 THEN IF LEN(Z1$)=Q0 THEN
  Z1$=DATE$(RR*Q33-Q32,RR*Q33)
CF 1164 IF N=Q68 AND (LEN(Z$)<6 OR LEN(Z1
 $)<6) THEN 1110
BJ 1170 N=CZ:CZ=Q0:? "K":GOSUB 3040:GOSUB
  1180:GOTO Q200
OQ 1180 ? "K":POSITION Q0,Q1:? "CHECKS":I
 F N=Q81 THEN POSITION Q14,Q1:? "Payee:
  ";PAY$
VO 1190 IF N=Q68 THEN POSITION Q10,Q1:? "
 DATES: ";Z$(Q1,Q2);"/";Z$(Q7,Q31);"/";
 Z$(Q32,Q33);" TO ";Z1$(Q1,Q2);"/";
WX 1192 IF N=Q68 THEN ? Z1$(Q7,Q31);"/";Z
 1$(Q32,Q33)
CA 1195 POSITION Q0,Q7:? "MMDDYY NUMBER P
 AYEE          AMOUNT":POSITION Q0,Q31
 :? "------ ------ --------------- ----
 -----"
RM 1197 POSITION Q13,Q19:? "CURRENT BALAN
 CE":POSITION Q37,Q19:? BAL2$;:POSITION
  Q15,Q16:? "CURRENT TOTAL"
VV 1198 POSITION Q0,Q32:RETURN
HA 1200 C$="0":T=Q0:C=Q0:FOR I=Q1 TO Q201
 :IF DATE$(Q33*I-Q32,Q33*I)="      " TH
 EN 1410
MM 1210 TRAP 1220:IF N=Q81 THEN IF PAY$(Q
 1,S)=PAYEE$(Q15*I-Q14,Q15*I-Q14+S-Q1)
 THEN 1250
WQ 1220 TRAP 40000:IF N=Q68 AND DATE$(Q33
 *I-Q32,Q33*I)>=Z$ AND DATE$(Q33*I-Q32,
 Q33*I)<=Z1$ THEN 1250
PA 1240 GOTO 1400
LS 1250 ? DATE$(Q33*I-Q32,Q33*I);" ";NO$(
 Q33*I-Q32,Q33*I);" ";PAYEE$(Q15*I-Q14,
 Q15*I);" ";AM$(Q9*I-Q8,Q9*I):C=C+Q1
AY 1260 IF CE$(I,I)<"Q" THEN T=T+VAL(AM$(
 Q9*I-Q8,Q9*I)):C$=STR$(T)
RD 1265 IF C=Q11 THEN C$=STR$(T):GOSUB Q4
 1:C$=F$:POSITION Q36,Q16:? C$
II 1270 IF C=Q11 THEN C=Q0:GOSUB 1460
EX 1400 NEXT I
PA 1410 POP :GOSUB Q41:C$=F$:POSITION Q36
 ,Q16:? C$:POSITION Q8,Q22:? "END OF FI
 LE <START> EXIT";
SS 1430 IF PEEK(Q279)=Q33 THEN POKE Q755,
 Q2:? "K":GOSUB 3080:GOTO Q111
HC 1440 POKE Q755,Q2-PEEK(Q755):POKE Q279
 ,Q0:FOR W=Q1 TO Q24:NEXT W
QU 1450 GOTO 1430
GK 1460 POSITION Q0,Q22:? "START-RE-START
  SELECT-CONT OPTION-EXIT";
ET 1470 IF PEEK(Q279)=Q32 THEN POKE Q755,
 Q2:GOSUB 1180:RETURN
YE 1480 IF PEEK(Q279)=Q33 THEN POKE Q755,
 Q2:POP :GOTO 1110
KT 1490 IF PEEK(Q279)=Q7 THEN POKE Q755,Q
 2:? "K":GOSUB 3080:POP :GOTO Q111
HW 1500 POKE Q755,Q2-PEEK(Q755):POKE Q279
 ,Q0:FOR W=Q1 TO Q24:NEXT W:GOTO 1470
AM 2000 POSITION Q12,Q22:? "MODE:Cheques"
 ;:POSITION Q31,Q29:? "A-Enter S-Search
 /edit E-Exit";
EH 2020 GOSUB Q23:IF N<>Q65 AND N<>Q83 AN
 D N<>Q69 THEN 2020
PJ 2035 GOSUB Q27
DH 2040 GOSUB 10000:IF N=Q69 THEN GOTO Q2
 10
RP 2050 IF N=Q83 THEN 712
TB 2060 POSITION Q10,Q22:? "MODE:Add cheq
 ues";:POSITION Q31,Q29:? "A-Add Save a
 ll data to disk E-Exit";
PZ 2080 GOSUB Q23:IF N<>Q65 AND N<>Q69 AN
 D N<>Q83 THEN 2080
XI 2100 GOSUB 10000:IF N=Q69 THEN GOSUB Q
 27:GOTO Q4
RC 2101 IF N=Q83 THEN GOSUB 580:GOTO Q100
YX 2102 RR=Q0:FOR I=Q1 TO Q201:IF PAYEE$(
 Q15*I-Q14,Q15*I)="               " THE
 N RR=I:GOTO 2106
FI 2104 NEXT I
CM 2106 GOSUB Q27:POSITION Q31,Q22:? "PAY
 EE":PP=Q1:GOSUB 9500:POSITION Q1,Q11:?
  "               ";:POSITION Q1,Q11:?
 PAY$;
OD 2130 GOSUB Q27:POSITION Q31,Q22:? "DAT
 E(MMDDYY) ":PP=Q2:GOSUB 9500:L=LEN(Z$)
CH 2135 IF L<Q33 THEN 2130
RO 2140 IF L=Q0 OR L>Q33 OR Z$(Q1,Q2)>"12
 " OR Z$(Q1,Q2)<"01" OR Z$(Q7,Q31)>"31"
  OR Z$(Q7,Q31)<"01" THEN 2130
XG 2150 POSITION Q20,Q11:? Z$;:GOSUB Q27:
 POSITION Q31,Q22:? "CATEGORY (A-X) ";
IW 2170 GOSUB Q23:IF N<Q65 OR N>88 THEN G
 OSUB 5150:GOTO 2170
QV 2172 IF N<81 THEN POSITION 29,Q15:? "E
 XPENSE";
KW 2174 IF N>Q81 THEN POSITION 29,Q15:? "
 INCOME ";
AZ 2190 GOSUB Q340:CAT1$=A$(Q10*R-Q9,Q10*
 R):POSITION Q37,Q11:? CAT1$;:GOSUB Q27
VV 2200 POSITION Q31,Q22:? "LAST:";NO;" C
 heck Number ";:PP=Q7:GOSUB 9500
BP 2205 L=LEN(Z1$):TRAP 2210:IF L>Q0 AND
 VAL(Z1$)<>NO THEN NO=VAL(Z1$)
TF 2210 TRAP 40000:IF L=Q0 THEN Z1$=STR$(
 NO+Q1):NO=NO+Q1
JO 2220 POSITION Q2,Q15:? "      ";:POSIT
 ION Q2,Q15:? Z1$;
ED 2230 GOSUB Q27:TRAP 2230:POSITION Q31,
 Q22:? "AMOUNT ";:PP=Q31:GOSUB 9500:TRA
 P 40000:IF P<Q0 OR P>999999.99 THEN 22
 30
NB 2240 GOSUB Q41:POSITION Q1,Q14:C$=F$:P
 OSITION Q14,Q15:? C$;:GOSUB Q27:POSITI
 ON Q31,Q29:? "CORRECT (Y/N) ";
GQ 2260 GOSUB Q23:IF N<>Q78 AND N<>Q89 TH
 EN 2260
TH 2280 IF N=Q78 THEN GOSUB Q27:RR=RR-Q1:
 GOTO Q100+Q20
IA 2285 L=LEN(Z1$):F$=Z1$
CQ 2286 IF L<Q33 THEN Z1$="      ":Z1$(Q3
 3-L+Q1,Q33)=F$
YB 2287 IF RR=Q1 THEN 2290
FK 2288 IF DATE$(Q33*(RR-Q1)-Q32,(RR-Q1)*
 Q33)>Z$ THEN GOSUB 4000:RR=XX:GOTO 229
 6
IZ 2290 PAYEE$(RR*Q15-Q14,Q15*RR)="
          ":PAYEE$(RR*Q15-Q14,RR*Q15)=P
 AY$:DATE$(Q33*RR-Q32,Q33*RR)=Z$
BG 2295 CAT$(RR*Q10-Q9,RR*Q10)=A$(Q10*R-Q
 9,Q10*R):NO$(RR*Q33-Q32,RR*Q33)=Z1$:CE
 $(RR,RR)=CHR$(Q64+R):AM$(Q9*RR-Q8,Q9*R
 R)=C$
CC 2296 GOSUB 950:BAL2$=STR$(BAL):GOSUB Q
 80
MK 2310 POSITION Q7,Q19:? C$:POSITION Q19
 ,Q19:? Z1$:POSITION Q37,Q19:? Z$:POSIT
 ION Q28,Q19:? BAL2$;
UH 2315 POSITION Q1,Q11:? "
  ";:POSITION Q20,Q11:? "      ";:POSIT
 ION Q2,Q15:? "      "
OQ 2316 POSITION Q14,Q15:? "         ";:P
 OSITION Q37,Q11:? "          ":GOSUB Q
 27:IF CH<>R THEN 2060
LL 2317 IF CH=R THEN 2000
KK 3040 POKE Q715,Q31:FOR CH=1715 TO 1716
 :POKE CH,224:NEXT CH:FOR CH=1717 TO 17
 27:POKE CH,232:NEXT CH
KN 3050 POKE Q715,Q31:FOR CH=1715 TO 1716
 :POKE CH,224:NEXT CH:FOR CH=1717 TO 17
 27:POKE CH,232:NEXT CH
LM 3060 POKE Q728,224:FOR CH=Q730 TO 1732
 :POKE CH,Q0:NEXT CH:POKE Q735,Q31
SC 3070 FOR CH=1741 TO Q749:POKE CH,Q0:NE
 XT CH:FOR CH=Q753 TO 1756:POKE CH,Q10:
 NEXT CH:RETURN
RD 3080 FOR CH=Q715 TO 1720:POKE CH,Q0:NE
 XT CH:POKE 1721,Q31:FOR CH=1722 TO 172
 4:POKE CH,202:NEXT CH:POKE 1753,Q14
JG 3100 POKE 1725,Q31:FOR CH=Q726 TO Q728
 :POKE CH,Q56:NEXT CH:FOR CH=Q730 TO 17
 32:POKE CH,104:NEXT CH:POKE Q735,Q0
TK 3110 FOR CH=1741 TO 1745:POKE CH,Q14:N
 EXT CH:POKE Q749,Q14:POKE Q753,Q0:FOR
 CH=1754 TO 1756:POKE CH,Q0:NEXT CH:RET
 URN
BW 3120 POKE 1692,Q8:POKE 1712,Q45:POKE 1
 713,Q46:POKE Q715,Q45:POKE 1715,34:POK
 E 1716,Q46:POKE 1717,34:POKE 1718,Q45
HQ 3140 FOR CH=1719 TO 1721:POKE CH,Q46:N
 EXT CH:FOR CH=1722 TO 1724:POKE CH,Q45
 :NEXT CH
AD 3150 FOR CH=1725 TO 1727:POKE CH,204:N
 EXT CH:FOR CH=Q728 TO Q730:POKE CH,60:
 NEXT CH
YD 3160 FOR CH=1731 TO 1733:POKE CH,124:N
 EXT CH:POKE 1734,Q46:POKE Q735,Q45:POK
 E 1736,Q0:POKE 1737,Q12:POKE 1738,Q0
JK 3170 POKE 712,202:FOR CH=1739 TO 1741:
 POKE CH,Q12:NEXT CH:POKE 1742,Q0:FOR C
 H=1743 TO 1745:POKE CH,Q12:NEXT CH
ZM 3180 POKE 710,Q45:POKE 709,Q0:FOR CH=Q
 749 TO 1757 STEP Q31:POKE CH,Q0:NEXT C
 H:POKE 1758,Q12:POKE 1759,Q0:RETURN
AW 3190 POKE 1692,25:POKE 1712,Q31:FOR CH
 =1713 TO 1720:POKE CH,Q0:NEXT CH:POKE
 1721,Q31
NL 3210 FOR CH=1722 TO 1724:POKE CH,202:N
 EXT CH:POKE 1725,Q31:FOR CH=Q726 TO Q7
 28:POKE CH,Q56:NEXT CH:POKE 1729,Q31
ZI 3220 FOR CH=Q730 TO 1732:POKE CH,104:N
```



```
   EXT CH:POKE 1733,Q31:FOR CH=1734 TO Q7
   35:POKE CH,Q0:NEXT CH
JS 3230 FOR CH=1736 TO 1745:POKE CH,Q14:N
   EXT CH:FOR CH=Q749 TO 1757 STEP Q31:PO
   KE CH,Q14:NEXT CH:POKE 710,Q31:POKE 70
   9,Q14
XT 3240 FOR CH=1758 TO 1759:POKE CH,Q14:N
   EXT CH:POKE 712,Q0:RETURN
DW 4000 I=RR-Q1
HV 4002 I=I-Q1:IF I=Q0 THEN XX=RR:GOTO 40
   70
LD 4003 IF I=Q1 OR DATE$(I*Q33-Q32,I*Q33)
   <Z$ THEN XX=RR:GOTO 4070
PD 4010 GOTO 4002
GA 4070 DATE$(Q33*XX-Q32,Q33*XX)=DATE$(Q3
   3*(XX-Q1)-Q32,(XX-Q1)*Q33):CE$(XX,XX)=
   CE$(XX-Q1,XX-Q1)
GC 4090 PAYEE$(Q15*XX-Q14,Q15*XX)=PAYEE$(
   Q15*(XX-Q1)-Q14,(XX-Q1)*Q15)
RM 4100 NO$(Q33*XX-Q32,Q33*XX)=NO$(Q33*(X
   X-Q1)-Q32,(XX-Q1)*Q33):AM$(Q9*XX-Q8,Q9
   *XX)=AM$(Q9*(XX-Q1)-Q8,(XX-Q1)*Q9)
AP 4120 CAT$(Q10*XX-Q9,Q10*XX)=CAT$(Q10*(
   XX-Q1)-Q9,(XX-Q1)*Q10):XX=XX-Q1:IF XX=
   I+Q1 THEN I=I+Q1:GOTO 4140
SJ 4124 GOTO 4070
RE 4140 DATE$(Q33*I-Q32,Q33*I)=Z$:CAT$(I*
   Q10-Q9,I*Q10)=A$(Q10*R-Q9,Q10*R)
IQ 4145 PAYEE$(Q15*I-Q14,Q15*I)="
        ":PAYEE$(Q15*I-Q14,Q15*I)=PAY$:
   CE$(I,I)=CHR$(Q64+R)
XU 4150 NO$(Q33*I-Q32,Q33*I)=Z1$:AM$(Q9*I
   -Q8,Q9*I)=C$:XX=RR:RR=I:RETURN
KQ 4200 ? #Q2;CE$(I,I);" ";CAT$(Q10*I-Q9,
   Q10*I);" ";DATE$(Q33*I-Q32,Q33*I-Q31);
   "/";DATE$(Q33*I-Q7,Q33*I-Q2);"/";
CG 4205 ? #Q2;DATE$(Q33*I-Q1,Q33*I);" ";:
   C=C+Q1:IF CE$(I,I)<"Q" THEN T=T+VAL(AM
   $(Q9*I-Q8,Q9*I))
KY 4207 IF CE$(I,I)>"P" THEN S=S+VAL(AM$(
   Q9*I-Q8,Q9*I))
NJ 4210 ? #Q2;NO$(Q33*I-Q32,Q33*I);" ";PA
   YEE$(Q15*I-Q14,Q15*I);" ";AM$(Q9*I-Q8,
   Q9*I):RETURN
EP 5000 F$=Q$:PB=LEN(C$):D=Q0:D1=Q0:FOR X
   =Q1 TO PB:IF C$(X,X)="." THEN D1=X
ZD 5030 NEXT X:D=PB-D1:IF D1>Q0 THEN F$(Q
   35-D1+Q1,Q35-D1+PB)=C$
DB 5050 IF D1=Q0 THEN F$(Q35-PB,Q35)=C$
AV 5060 RETURN
CA 5080 BAL1$=BAL$:L=LEN(BAL2$):D=Q0:D1=Q
   0:FOR X=Q1 TO L:IF BAL2$(X,X)="." THEN
    D1=X
KT 5110 NEXT X:D=L-D1:IF D1>Q0 THEN BAL1$
   (Q8-D1+Q1,Q8-D1+L)=BAL2$
IA 5130 IF D1=Q0 THEN BAL1$(Q8-L,Q8)=BAL2
   $
HN 5140 BAL2$=BAL1$:RETURN
MP 5150 SOUND Q0,Q192,Q10,Q10:FOR CH=Q1 T
   O Q16:NEXT CH:SOUND Q0,Q0,Q0,Q0:RETURN
KZ 6000 GOSUB Q27:POSITION Q8,Q22:? "Cate
   gory (A-X)  Y-All"
BI 6002 GOSUB Q23:IF N<Q65 AND N>Q89 THEN
    6002
UF 6004 ? "K":IF N=Q89 THEN FLAG$="All":G
   OTO 6009
CT 6005 GOSUB Q340:FLAG$=A$(Q10*R-Q9,Q10*
   R)
ET 6009 GOSUB 3040:GOSUB 6020:GOTO 6110
NK 6020 ? "K":POKE Q752,Q1:POSITION Q0,Q1
   :? " DISPLAY CHECKS      CATEGORY:";FL
   AG$
LX 6030 POSITION Q0,Q7:? "MMDDYY NUMBER P
   AYEE            AMOUNT"
VX 6040 POSITION Q0,Q31:? "------ ------
   --------------- ----------":POSITION Q1
   5,Q16:? "EXPENSE TOTAL"
RS 6043 POSITION Q13,Q19:? "CURRENT BALAN
   CE":POSITION Q37,Q19:? BAL2$:POSITION
   Q15,Q17:? "INCOME  TOTAL":POSITION Q0,
   Q32
AG 6100 RETURN
DE 6110 S=Q0:T=Q0:C=Q0:FOR I=Q1 TO Q201:I
   F DATE$(Q33*I-Q32,Q33*I)="        " THEN
    6300
HK 6116 IF FLAG$="All" THEN 6120
DM 6118 IF FLAG$<>CAT$(Q10*I-Q9,Q10*I) TH
   EN 6299
LM 6120 ? DATE$(Q33*I-Q32,Q33*I);" ";NO$(
   Q33*I-Q32,Q33*I);" ";PAYEE$(Q15*I-Q14,
   Q15*I);" ";AM$(Q9*I-Q8,Q9*I):C=C+Q1
LZ 6122 IF CE$(I,I)<"Q" THEN T=T+VAL(AM$(
   Q9*I-Q8,Q9*I))
KW 6125 IF CE$(I,I)>"P" THEN S=S+VAL(AM$(
   Q9*I-Q8,Q9*I))
YI 6130 IF C=Q11 THEN C$=STR$(T):GOSUB Q4
   1:C$=F$:POSITION Q36,Q16:? C$:C$=STR$(
   S):GOSUB Q41:C$=F$:POSITION Q36,Q17
AX 6140 IF C=Q11 THEN C=Q0:? C$:GOSUB 640
   0
HJ 6299 NEXT I
WS 6300 POP :C$=STR$(T):GOSUB Q41:C$=F$:P
   OSITION Q36,Q16:? C$:C$=STR$(S):GOSUB
   Q41:C$=F$:POSITION Q36,Q17:? C$
LR 6310 POSITION Q35,Q22:? "END OF FILE <
   START> TO EXIT"
ED 6320 IF PEEK(Q279)=Q33 THEN 6450
YZ 6325 POKE Q755,Q2-PEEK(Q755):POKE Q279
   ,Q0:FOR W=Q1 TO Q20:NEXT W
RV 6330 GOTO 6320
FX 6400 POSITION Q8,Q22:? "OPTION-MORE ST
   ART-EXIT";
LE 6410 IF PEEK(Q279)=Q33 THEN POP :GOTO
   6450
PH 6420 IF PEEK(Q279)=Q7 THEN GOSUB 6020:
   RETURN
ZB 6425 POKE Q755,Q2-PEEK(Q755):POKE Q279
   ,Q0:FOR W=Q1 TO Q20:NEXT W
RW 6430 GOTO 6410
PZ 6450 POKE Q755,Q2:? "K":GOSUB 3080:POP
    :GOTO Q111
ZD 7000 ? "K":GOSUB 3120:POSITION Q12,Q1:
   ? "PRINTER MENU":POSITION Q8,Q22:? "CU
   RRENT BALANCE : ";BAL2$:PAY$="":Z$="":
   Z1$=""
WA 7005 POSITION Q8,Q31:? "EPSON RX80/FT
   80 COLUMNS":POSITION Q13,Q29:? "LAST T
   OTAL :  ";C$;:TRAP 40000:BB=BAL1
JB 7006 POSITION Q8,Q33:? "STARTING BALAN
   CE : ";BAL1:POSITION Q14,Q11:? "A-CATE
   GORIES":TRAP 8155
JB 7010 POSITION Q14,Q14:? "B-SEARCH":POS
   ITION Q14,Q17:? "C-BALANCE":POSITION Q
   14,Q20:? "E-EXIT"
JA 7015 GOSUB Q23:IF N<>Q65 AND N<>Q66 AN
   D N<>67 AND N<>Q69 THEN 7015
KB 7017 IF N=Q69 THEN ? "K":POKE 559,Q0:G
   OSUB 3190:GOTO Q111
RS 7020 S$=CHR$(N):POSITION Q14,Q35:? S$;
   " SELECTED";
VX 7040 IF S$="A" THEN S=Q0:POSITION Q9,Q
   8:? "CATEGORY (A-X) Y-ALL ";:GOSUB Q23
   :IF N<Q65 AND N>Q89 THEN 7040
CU 7045 IF S$="C" THEN 8000
FX 7050 IF S$="B" THEN 7600
YZ 7060 IF S$="C" THEN S=Q0:GOTO Q900
WL 7065 IF S$="A" AND N=Q89 THEN PAY$="Al
   l":GOTO Q900
RL 7070 IF S$="A" THEN GOSUB Q340:PAY$=A$
   (Q10*R-Q9,Q10*R):GOTO Q900
BY 7600 ? "K":POSITION Q12,Q1:? "PRINTER
   MENU":POSITION Q14,Q11:? "A-Dates":POS
   ITION Q14,Q14:? "B-Payee":POSITION Q14
   ,Q17
YP 7610 ? "E-Exit":POSITION Q12,Q31:? "SE
   ARCH":S=N
PQ 7620 GOSUB Q23:IF N<>Q65 AND N<>Q66 AN
   D N<>Q69 THEN GOTO 7620
DT 7630 IF N=Q69 THEN GOTO Q25
FR 7632 IF N=Q65 THEN POSITION Q12,Q35:?
   "DATE 1";:INPUT Z$
ZI 7634 IF N=Q65 THEN POSITION Q12,Q8:? "
   DATE 2";:INPUT Z1$
IO 7640 IF N=Q65 AND LEN(Z$)=Q0 THEN Z$=D
   ATE$(Q33*Q1-Q32,Q33*Q1)
LQ 7650 IF N=Q65 AND LEN(Z1$)=Q0 THEN Z1$
   =DATE$(RR*Q33-Q32,RR*Q33)
RL 7660 IF N=Q66 THEN POSITION Q12,Q35:?
   "Payee ";:INPUT PAY$:L=LEN(PAY$):GOTO
   Q900
WU 7900 POKE Q286,Q64:OPEN #Q2,Q8,Q0,"P:"
   :? #Q2;CHR$(Q55);"W";CHR$(Q1);CHR$(Q15
   );CHR$(Q55);"A";CHR$(Q10):GOSUB 7905:G
   OTO 7930
BA 7905 IF LEN(PAY$)>Q0 THEN ? #Q2;"
            CATEGORY:";PAY$:? #Q2:? #Q2
JS 7907 IF LEN(Z$)>Q0 AND LEN(Z1$)>Q0 THE
   N ? #Q2;"                 DATES ";Z$
   (Q1,Q2);"/";Z$(Q7,Q31);"/";Z$(Q32,Q33)
   ;" TO ";
SG 7908 IF LEN(Z$)>Q0 AND LEN(Z1$)>Q0 THE
   N ? #Q2;Z1$(Q1,Q2);"/";Z1$(Q7,Q31);"/"
   ;Z1$(Q32,Q33):? #Q2:? #Q2
SR 7910 ? #Q2;"C CATEGORY   DATE     NUMB
   ER PAYEE              AMOUNT"
XP 7920 ? #Q2;"- ---------  -------- ----
   -- --------------- ----------":RETURN
BE 7930 C=Q0:S=Q0:T=Q0:FOR I=Q1 TO Q201:I
   F DATE$(Q33*I-Q32,Q33*I)="        " THEN
    7970
ZJ 7940 IF (PAY$="All" OR PAY$=CAT$(Q10*I
   -Q9,Q10*I)) AND S$="A" THEN GOSUB 4200
CF 7950 IF S$="B" AND N=Q65 AND Z$<=DATE$
   (Q33*I-Q32,Q33*I) AND Z1$>=DATE$(Q33*I
   -Q32,Q33*I) THEN GOSUB 4200
HU 7960 IF S$="B" AND N=Q66 AND PAY$=PAYE
   E$(Q15*I-Q14,Q15*I-Q14+L-Q1) THEN GOSU
   B 4200
DV 7965 IF C=PL THEN GOSUB 7980
FV 7970 NEXT I:? #Q2;"--------------------
   ------------------------------------":C
   $=STR$(T):GOSUB Q41:C$=F$
WJ 7974 ? #Q2;"
         TOTAL EXPENSE   ";C$
YX 7976 C$=STR$(S):GOSUB Q41:C$=F$:? #Q2;
   "                              TOTAL I
   NCOME   ";C$
YU 7977 ? #Q2;"--------------------------
   ----------------------------":CLOSE #Q
   2:POKE Q286,Q192:GOTO Q25
PJ 7980 C=Q0:? #Q2;"--------------------
   ------------------------------------"
XT 7982 C$=STR$(T):GOSUB Q41:C$=F$:? #Q2;
   "                          SUB TOTAL EX
   PENSE   ";C$
PN 7983 C$=STR$(S):GOSUB Q41:C$=F$:? #Q2;
   "                          SUB TOTAL I
   NCOME   ";C$
CI 7984 ? #Q2;"--------------------------
   -------------------------------"
HB 7986 POKE Q286,Q192:? "K":POSITION Q33
   ,Q31:? "START-EXIT SELECT-MORE"
OX 7988 IF PEEK(Q279)=Q33 THEN CLOSE #Q2:
   POP :GOTO Q25
CJ 7990 IF PEEK(Q279)=Q32 THEN GOSUB 7905
   :RETURN
DV 7992 GOTO 7988
HR 7995 GOSUB Q27:POSITION Q2,Q29:? "
   SEARCHING..PLEASE WAIT";:RETURN
IQ 8000 POSITION Q8,Q35:? "NEW STARTING B
   ALANCE (Y/N)";:GOSUB Q23:IF N<>Q89 AND
    N<>Q78 THEN 8000
EL 8001 POKE Q286,Q64:? "K":C1=Q0:FOR I=Q
   1 TO Q201:IF DATE$(Q33*I-Q32,Q33*I)<>"
```

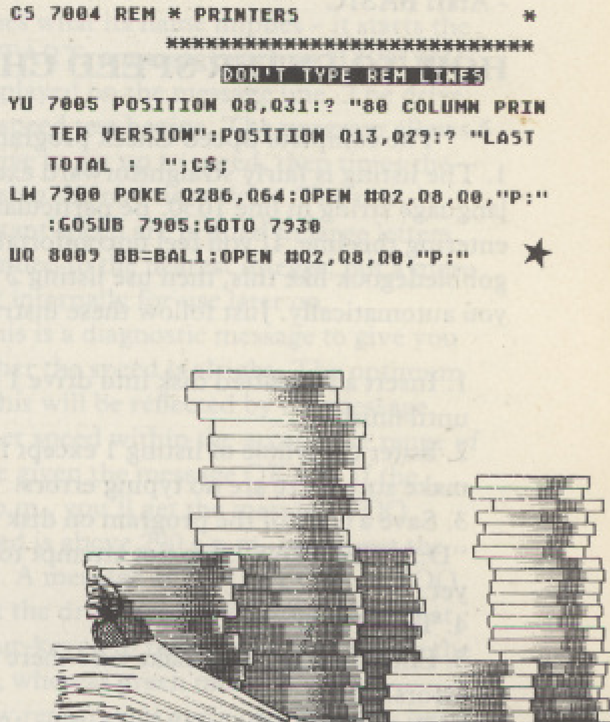


```
   " THEN C1=C1+Q1
QM 8002 NEXT I:PG=INT(C1/PL)+Q1:IF C1<PL
   THEN PG=Q1:S=Q1:E=C1:GOTO 8008
ZB 8003 ? :? "PAGE LENGTH=";PL;" PAGES=";
   PG
AU 8004 ? :? "ENTER PAGE NO REQUIRED OR R
   ETURN FOR ALL";:TRAP 8006:INPUT R:IF R
   >PG THEN 8004
XS 8005 S=R*PL-(PL-Q1):E=R*PL:GOTO 8008
BA 8006 TRAP 40000:S=Q1:E=Q201
JM 8008 BB=BAL1:IF N=Q89 THEN POSITION Q1
   2,Q8:? "NEW START BALANCE ";:INPUT BAL
   1:TRAP 8155
OK 8009 OPEN #Q2,Q8,Q0,"P:":? #Q2;CHR$(Q5
   5);"W";CHR$(Q1);CHR$(Q15);CHR$(Q55);"A
   ";CHR$(Q10)
RM 8010 BAL2$=STR$(BAL1):GOSUB Q80:GOSUB
   8020:GOTO 8070
HN 8020 ? #Q2;"--------------------------
   -----------------------------------------
   -"
GI 8030 ? #Q2;"                        STAR
   TING BALANCE              ";BAL2$
HT 8040 ? #Q2;"--------------------------
   -----------------------------------------
   -"
TB 8050 ? #Q2;"C CATEGORY    DATE     NUMB
   ER PAYEE          AMOUNT    BALANCE"
QR 8060 ? #Q2;"- ----------  ---------- ----
   -- -------------- ---------- ---------
   -":RETURN
YK 8070 C=Q0:R1=Q0:T=Q0:FOR I=Q1 TO Q201:
   IF DATE$(Q33*I-Q32,Q33*I)="        " THE
   N 8125
HQ 8075 R1=R1+Q1:IF R1<S OR R1>E THEN 810
   0
LO 8080 ? #Q2;CE$(I,I);" ";CAT$(Q10*I-Q9,
   Q10*I);" ";DATE$(Q33*I-Q32,Q33*I-Q31);
   "/";DATE$(Q33*I-Q7,Q33*I-Q2);"/";
JI 8085 ? #Q2;DATE$(Q33*I-Q1,Q33*I);" ";
AX 8090 ? #Q2;NO$(Q33*I-Q32,Q33*I);" ";PA
   YEE$(Q15*I-Q14,Q15*I);"  ";AM$(Q9*I-Q3
   5,Q9*I);" ";:C=C+Q1
MK 8100 IF CE$(I,I)<"Q" THEN T=T+VAL(AM$(
   Q9*I-Q8,Q9*I)):C$=STR$(T):BAL1=BAL1-VA
   L(AM$(Q9*I-Q8,Q9*I)):BAL2$=STR$(BAL1)
HB 8110 IF CE$(I,I)>"P" THEN BAL1=BAL1+VA
   L(AM$(Q9*I-Q8,Q9*I)):BAL2$=STR$(BAL1)
MZ 8115 IF R1<S OR R1>E THEN 8125
MC 8120 GOSUB Q41:C$=F$:GOSUB Q80:? #Q2;B
   AL2$:IF C=PL THEN GOSUB 8130:GOSUB 816
   0
LK 8125 NEXT I:GOSUB 8130:GOTO 8155
HS 8130 ? #Q2;"--------------------------
   -----------------------------------------
   -"
MZ 8140 ? #Q2;"
      TOTALS          ";C$;" ";BAL2$
RQ 8150 ? #Q2;"--------------------------
   -----------------------------------------
   -":RETURN
VN 8155 CLOSE #Q2:POKE Q286,Q192:BAL1=BB:
   GOTO Q25
TY 8160 ? "K↓↓↓→→→START-EXIT SELECT-MORE"
SJ 8162 IF PEEK(Q279)=Q33 THEN POP :GOTO
   8155
ML 8180 IF PEEK(Q279)=Q32 THEN ? #Q2:GOSU
   B 8020:C=Q0:RETURN
VL 8190 GOTO 8162
IY 8300 POSITION Q8,Q22:? "Erase Categori
   es";
SY 8305 POSITION Q31,Q29:? " ERASE (A-X)
   or Y-EXIT or Z-ALL      ";:GOSUB Q23:IF
   N>Q64 AND N<Q89 THEN N=N-Q64:GOTO 8320
AE 8310 IF N=Q89 THEN RETURN
QE 8315 IF N=90 THEN A$(Q1)=" ":A$(Q240)="
   ":A$(Q2)=A$:GOSUB 170:RETURN
CR 8320 A$(Q10*N-Q9,Q10*N)="         ":G
   OSUB 170:GOTO 8300
GL 9000 CLOSE #Q1:OPEN #Q1,Q31,Q0,"K:":GE
   T #Q1,N:CLOSE #Q1:RETURN
RO 9010 POSITION Q0,Q22:? "
                                  ";
DB 9020 POSITION Q0,Q29:? "
                              ";:RETURN
MI 9500 U$="":IF CZ=Q68 THEN X1=6:GOTO 95
   10
DV 9501 IF CZ=Q81 THEN X1=Q15:GOTO 9510
VW 9502 IF PP=Q1 THEN XX=Q1:YY=Q11:X1=15
FM 9504 IF PP=Q2 THEN XX=Q20:YY=Q11:X1=6
OR 9506 IF PP=Q7 THEN XX=Q2:YY=Q15:X1=6
BV 9508 IF PP=Q31 THEN XX=Q14:YY=Q15:X1=9
XJ 9509 IF PP=Q32 THEN X1=Q10
TT 9510 POKE Q752,Q0:POSITION XX,YY:? "";
   :FOR Z=Q1 TO X1
OM 9520 GOSUB Q23:IF N=155 THEN 9527
ZY 9521 IF (N=156 OR N=254 OR N=126) AND
   Z<>Q1 THEN 9524
TB 9522 IF PP=Q31 AND N<>Q56-Q10 AND (N<4
   8 OR N>Q56+Q1) THEN GOSUB 5150:GOTO 95
   20
HP 9523 IF (PP=Q2 OR PP=Q7) AND (N<48 OR
   N>Q56+Q1) THEN GOSUB 5150:GOTO 9520
GF 9524 IF N=156 OR N=254 OR N=126 THEN F
   OR I=Q1 TO Z-Q1:? CHR$(126);:NEXT I:GO
   TO 9500
AE 9525 ? CHR$(N);:U$(Z,Z)=CHR$(N)
NQ 9526 NEXT Z
KM 9527 IF PP=Q1 THEN PAY$=U$:IF PAY$=""
   THEN GOSUB 5150:GOTO 9520
HW 9528 IF PP=Q2 THEN Z$=U$
FF 9530 IF PP=Q7 THEN Z1$=U$
EU 9532 IF PP=Q31 THEN C$=U$:IF C$="" THE
   N GOSUB 5150:GOTO 9520
PF 9533 IF PP=Q32 THEN B$=U$
DD 9534 POKE Q752,Q1:RETURN
DL 9600 POKE 54286,Q64:POKE 710,202:POKE
   709,Q0:POKE 752,Q1:? "K DEFINE CHECKBO
   OKS/RESTART/CHANGE          "
CR 9610 POSITION Q8,Q2:? "CHECKBOOKS":FOR
   I=Q1 TO Q32:POSITION Q33,I*Q2+Q2:? I;
   " ";BK$(Q15*I-Q14,Q15*I):NEXT I
JF 9620 POSITION Q33,Q14:? "CURRENT BOOK:
   ";BK$(Q15*BK-Q14,Q15*BK):POSITION Q33
   ,Q16:? "6..DEFINE NEW CHEQUEBOOK"
VJ 9630 POSITION Q33,Q18:? "7..RESTART CU
   RRENT CHEQUE BOOK":POSITION Q33,Q20:?
   "8..EXIT"
OY 9670 GOSUB 9000:N=N-48:IF N<Q1 OR N>Q8
   THEN 9670
ZN 9671 IF N=Q8 THEN 9790
VD 9672 IF N>Q32 THEN 9675
DX 9673 IF N=BK OR (BK$(Q15*N-Q14,Q15*N)=
   "              " AND N<Q33) THEN 9670
UB 9674 IF N<Q33 THEN GOSUB 9800:GOTO Q10
   0
VJ 9675 IF N=Q35 THEN S$=BK$(Q15*BK-Q14,Q
   15*BK):GOTO 9690
DI 9676 ? "K":POSITION Q0,Q0:? "
   DEFINE NEW CHEQUE BOOK              "
BL 9678 POSITION Q0,Q2:? " PLEASE NOTE-PR
   ESENT RECORDS WILL BE      ":POSITION Q2
   ,Q7:? " ERASED (E)-EXIT  (C)-CONINUE
   "
ML 9680 GOSUB 9000:IF N<>67 AND N<>Q69 TH
   EN 9680
PK 9682 IF N=Q69 THEN 9600
BF 9683 ? :? " ENTER NEW BOOK NO":GOSUB 9
   000:N=N-48:IF N>Q32 OR N<Q1 OR BK$(Q15
   *N-Q14,Q15*N)<>"              " THEN
   9683
FG 9684 BK=N:? "ENTER NEW CHQ BOOK NAME":
   INPUT S$:IF S$="" OR LEN(S$)>Q15 THEN
   9684
IU 9690 BK$(Q15*BK-Q14,Q15*BK)=S$
QI 9740 PAYEE$(Q1)=" ":PAYEE$(3000)=" ":P
   AYEE$(Q2)=PAYEE$:NO$(Q1)=" ":NO$(Q200)
   =" ":NO$(Q2)=NO$:DATE$=NO$
XN 9750 CAT$(Q1)=" ":CAT$(Q4)=" ":CAT$(Q2
   )=CAT$:AM$(Q1)=" ":AM$(1800)=" ":AM$(Q
   2)=AM$:CE$=CAT$(Q1,Q201):RR=Q1
RF 9760 TRAP 9760:? "K  NEW STARTING BAL
   ANCE: ";:INPUT BAL1:TRAP 40000:BAL=BAL
   1:NO=Q0:POSITION Q0,12
ZZ 9770 IF N=Q35 THEN ? "↓↓→CURRENT BOOK:
   ";BK;" TITLE:";BK$(Q15*BK-Q14,Q15*BK):
   ?
VS 9772 S$="":? "ENTER NEW TITLE(RETURN)-
   SAME":INPUT S$:IF LEN(S$)>Q0 THEN BK$(
   Q15*BK-Q14,Q15*BK)="               "
HY 9773 IF LEN(S$)>Q0 THEN BK$(Q15*BK-Q14
   ,Q15*BK)=S$
KX 9780 BK$(Q15*BK-Q14,Q15*BK)=S$:F$="D:C
   HQ":F$(6)=STR$(BK):F$(LEN(F$)+Q1)=".DA
   T":GOSUB 11010:GOSUB 580:GOSUB 9900:GO
   TO 100
RR 9790 ? "K":POKE 54286,255:GOTO 110
NS 9800 ? "K":POSITION Q0,Q0:? "
    CHANGE CHEQUE BOOKS                 ":POSIT
   ION Q0,Q2:? "SAVE NO:";BK;" ";
MN 9810 ? BK$(Q15*BK-Q14,Q15*BK);" FIRST
   (Y/N)";:Z=N:GOSUB 9000:IF N=Q89 THEN G
   OSUB 580:GOSUB 9900
UE 9815 IF N<>Q78 THEN 9800
UR 9820 N=Z:F$="D:CHQ":F$(Q33)=STR$(N):F$
   (LEN(F$)+Q1)=".DAT":BK=N:GOSUB 11010:G
   OSUB 650:GOSUB 40:RETURN
SR 9900 F$="D:CAT":F$(Q33)=STR$(BK):F$(LE
   N(F$)+Q1)=".DAT":CLOSE #Q2:OPEN #Q2,8,
   Q0,F$
PH 9910 FOR I=Q1 TO Q33:? #Q2;A$(40*I-39,
   40*I):NEXT I:CLOSE #Q2:RETURN
AJ 10000 POSITION Q1,Q11:? "
     ";:POSITION Q20,Q11:? "      ";:POSI
   TION Q37,Q11:? "     ";
FQ 10010 POSITION Q2,Q15:? "      ";:POSI
   TION Q14,Q15:? "      ";:POSITION 2
   9,Q15:? "     ";:RETURN
MP 11000 CLOSE #Q2:OPEN #Q2,Q31,Q0,"D:BOO
   K.DAT"
AD 11002 FOR I=Q1 TO Q32:INPUT #Q2;S$:BK$
   (Q15*I-Q14,Q15*I)=S$:NEXT I:INPUT #Q2;
   BK:CLOSE #Q2:RETURN
HD 11010 CLOSE #Q2:OPEN #Q2,8,Q0,"D:BOOK.
   DAT":FOR I=Q1 TO Q32:? #Q2;BK$(Q15*I-Q
   14,Q15*I):NEXT I:? #Q2;BK:CLOSE #Q2:RE
   TURN
KJ 30000 RESTORE 30170:FOR N=Q0 TO Q99:RE
   AD X:POKE 1664+N,X:NEXT N:COLTAB=1712:
   LUMTAB=COLTAB+Q24:X=USR(1693)
ER 30030 POKE 512,128:POKE 513,Q33:DSTART
   =PEEK(560)+256*PEEK(561):FOR N=DSTART+
   Q33 TO DSTART+Q28:POKE N,130:NEXT N
FF 30100 POKE DSTART+Q7,194:POKE Q286,Q19
   2:PRINT CHR$(125):POKE 710,PEEK(COLTAB
   ):POKE 709,PEEK(LUMTAB)
EA 30160 RETURN
TS 30170 DATA 72,138,72,174,156,6,189,176
   ,6,141,10,212,141,24,208,189,200,6,141
   ,23,208,238,156,6,104,170,104,64,17,10
   4
XJ 30200 DATA 169,7,160,168,162,6,32,92,2
   28,96,169,1,141,156,6,76,98,228,4,0,0,
   0,0,0,0,0,0,4,202,202
PT 30230 DATA 202,4,56,56,56,4,104,104,10
   4,4,0,0,14,14,14,14,14,14,14,14,14,14,
   0,0,0,14,0,0,0,14,0,0,0,14,14,14,0,0,0
   ,0
```

LISTINGS 2 & 3 ▶

```
DB 4198 REM *****************************
            * AUTOCHECK - Listing 2     *
            * for FORTY COLUMN PRINTER *
GV 4199 REM *****************************
              DO NOT TYPE IN REM LINES
QE 4200 ? #Q2;DATE$(Q33*I-Q32,Q33*I);" ";
   :C=C+Q1
MF 4205 IF CE$(I,I)<"Q" THEN T=T+VAL(AM$(
   Q9*I-Q8,Q9*I))
KY 4207 IF CE$(I,I)>"P" THEN S=S+VAL(AM$(
   Q9*I-Q8,Q9*I))
UY 7005 POSITION Q8,Q31:? "40 COLUMN PRIN
   TER VERSION":POSITION Q13,Q29:? "LAST
   TOTAL :  ";C$;
LW 7900 POKE Q286,Q64:OPEN #Q2,Q8,Q0,"P:"
   :GOSUB 7905:GOTO 7930
VW 7907 IF LEN(Z$)>Q0 AND LEN(Z1$)>Q0 THE
   N ? #Q2;"   DATES ";Z$(Q1,Q2);"/";Z$(Q
   7,Q31);"/";Z$(Q32,Q33);" TO ";
SG 7908 IF LEN(Z$)>Q0 AND LEN(Z1$)>Q0 THE
   N ? #Q2;Z1$(Q1,Q2);"/";Z1$(Q7,Q31);"/"
   ;Z1$(Q32,Q33):? #Q2:? #Q2
AT 7910 ? #Q2;"MMDDYY NUMBER PAYEE
      AMOUNT"
JW 7920 ? #Q2;"------- ------ ------------
   --- ----------":RETURN
VJ 7970 NEXT I:? #Q2;"-------------------
   ----------------------":C$=STR$(T):GOSUB
    Q41:C$=F$
AR 7974 ? #Q2;"                  TOTAL EXPENS
   E    ";C$
HY 7976 C$=STR$(S):GOSUB Q41:C$=F$:? #Q2;
   "                   TOTAL INCOME    ";C$
ZL 7977 ? #Q2;"---------------------------
   ---------------":CLOSE #Q2:POKE Q286,Q19
   2:GOTO Q25
YF 7980 C=Q0:? #Q2;"---------------------
   ------------------"
VZ 7982 C$=STR$(T):GOSUB Q41:C$=F$:? #Q2;
   "              SUB TOTAL EXPENSE    ";C$
WY 7983 C$=STR$(S):GOSUB Q41:C$=F$:? #Q2;
   "              SUB TOTAL INCOME    ";C$
KZ 7984 ? #Q2;"---------------------------
   --------------"
UQ 8009 BB=BAL1:OPEN #Q2,Q8,Q0,"P:"
JA 8020 ? #Q2;"---------------------------
   --------------"
FK 8030 ? #Q2;"              STARTING BALANCE
       ";BAL2$
JG 8040 ? #Q2;"---------------------------
   --------------"
RR 8050 ? #Q2;"MMDD PAYEE            AMOUNT
      BALANCE   "
IR 8060 ? #Q2;"---- ------------- --------
   -- -----------":RETURN
AQ 8080 ? #Q2;DATE$(Q33*I-Q32,Q33*I-Q2);"
    ";PAYEE$(Q15*I-Q14,Q15*I-Q2);" ";AM$(
   Q9*I-Q8,Q9*I);" ";:C=C+Q1
EH 8085 REM THIS LINE NOT REQUIRED
DQ 8090 REM THIS LINE NOT REQUIRED
JF 8130 ? #Q2;"---------------------------
   --------------"
NV 8140 ? #Q2;"              TOTALS   ";C$;" "
   ;BAL2$
BD 8150 ? #Q2;"---------------------------
   --------------":RETURN
```

```
LK 7003 REM ******************************
            * AUTOCHECK - Listing 3     *
            * for NON-EPSON 80 COLUMN  *
CS 7004 REM * PRINTERS                 *
            ******************************
                 DON'T TYPE REM LINES
YU 7005 POSITION Q8,Q31:? "80 COLUMN PRIN
   TER VERSION":POSITION Q13,Q29:? "LAST
   TOTAL :  ";C$;
LW 7900 POKE Q286,Q64:OPEN #Q2,Q8,Q0,"P:"
   :GOSUB 7905:GOTO 7930
UQ 8009 BB=BAL1:OPEN #Q2,Q8,Q0,"P:"       ★
```



SPEED CHECK

by Garry Francis

Speed Check is an essential utility for all owners of Atari disk drives. The program allows you to check the speed of the motor in your disk drive without having to pull the drive to pieces. It presents a clear, no-nonsense digital display of test results as well as diagnostic messages, mean and standard deviation. In addition, it is the only disk speed checker that works on both PAL and NTSC systems.

The accompanying article explains how to get Speed Check up and running and how to use it. This is followed by a brief discussion of how the program works for the benefit of advanced users. In a follow-up article next issue, I'll discuss the symptoms of an incorrect drive speed, 3 ways of testing the speed and how to adjust the speed yourself.

System Requirements

- Atari 400/800/XL/XE computer with a minimum of 16k RAM
- Any Atari (or compatible) disk drive whose optimum motor speed is 288 r.p.m.
- Atari BASIC

HOW TO ENTER SPEED CHECK

The complete Speed Check program is given in listing 1. The listing is fairly straightforward except for the machine language string in line 1030. Be particularly careful when entering this line. If you feel uncomfortable with lines of gobbledegook like this, then use listing 2 to generate it for you automatically. Just follow these instructions:

1. Insert a formatted disk into drive 1 and leave it there until finished.
2. Enter the whole of listing 1 except for line 1030 and make sure there are no typing errors.
3. Save a copy of the program on disk using SAVE "D:SPEED.BAS". Do not attempt to run the program yet.
4. Type NEW.
5. Enter listing 2 and make sure there are no typing errors.
6. Type RUN. This will create line 1030 for you on a temporary file called TEMP.
7. Type NEW.
8. Load the original program using LOAD "D:SPEED.BAS".
9. Enter line 1030 using ENTER "D:TEMP".
10. Save the completed program using SAVE "D:SPEED.BAS".

```
CS 1 REM #################################
OB 2 REM #          SPEED CHECK          #
WQ 3 REM #     Version 1.0    20/5/83    #
HX 4 REM #Copyright 1983 Garry Francis #
OG 5 REM #-------------------------------#
XD 6 REM #  PAGE 6 MAGAZINE - ENGLAND  #
CY 7 REM #################################
NN 8 REM
QI 100 GOSUB 1000
CV 110 POKE 77,0:? CHR$(125):POSITION 8,9
   :? "TEST WHICH DRIVE (1-4)?":POKE 16,6
   4:POKE 53774,64:OPEN #1,4,0,"K:"
UP 120 TRAP 120:GET #1,A:IF A>127 THEN A=
   A-128
WL 130 IF A<49 OR A>52 THEN 120
LQ 140 CLOSE #1:POKE 16,0:POKE 53774,0:PO
   KE 767,0:TRAP 40000:DR=A-48:POKE 769,D
   R
NL 150 POSITION 2,9:? "INSERT A FORMATTED
    DISK INTO DRIVE ";DR:? :? "PRESS OPT
   ION TO RE-RUN"
WE 160 ? :? "PRESS  SELECT  TO STOP DRIVE
   ":? :? "PRESS  START  TO START DRIVE":
   T=0:SUM=0
ZG 170 IF PEEK(53279)=3 THEN 110
ZC 180 IF PEEK(53279)<>6 THEN 170
FT 190 POKE 77,0:POSITION 2,9:? "
    TESTING DRIVE ";DR;"              "
AX 200 A=USR(ADR(ML$)):IF PEEK(771)>1 THE
   N POSITION 2,9:? "ERROR ";PEEK(771);".
   ..TEST ABORTED ON DRIVE ";DR:GOTO 170
FD 210 IF PEEK(204)=2 THEN POKE 77,0:POSI
   TION 9,9:? "TEST PAUSED ON DRIVE ";DR:
   GOTO 170
TY 220 IF PEEK(204) THEN 110
KE 230 T=T+1:R(T)=FACTOR/(PEEK(205)+256*P
   EEK(206)):SUM=SUM+R(T):RPM=INT(R(T)+0.
   5):POSITION 2,0:? "TEST #";T;" "
BQ 240 POSITION 11,0:? RPM;" RPM ":IF RPM
   <285 THEN POKE 711,56:? "too slow":GOT
   O 280
YJ 250 IF RPM>290 THEN POKE 711,56:? "too
```

Listing 1

```
CS 1 REM #################################
CY 2 REM # ROUTINE TO CREATE LINE 1030 #
RH 3 REM #        OF SPEED CHECK        #
SB 4 REM #       by Garry Francis       #
GL 5 REM #        PAGE 6 Issue 24       #
CX 6 REM #################################
ZQ 10 OPEN #1,8,0,"D:TEMP":PRINT #1;"1030
    ML$=";CHR$(34);
FG 20 FOR I=1 TO 70:READ A:PUT #1,A:NEXT
   I:PRINT #1;CHR$(34):CLOSE #1
HV 30 DATA 104,169,5,133,203,32,83,228,17
   3,3
DO 40 DATA 3,48,56,173,31,208,41,6,73,6
IL 50 DATA 133,204,208,45,198,203,208,233
   ,169,30
ZZ 60 DATA 133,203,169,0,133,20,133,19,32
   ,83
FE 70 DATA 228,173,3,3,48,23,173,31,208,4
   1
JO 80 DATA 6,73,6,133,204,208,12,198,203,
   208
CJ 90 DATA 233,165,20,133,205,165,19,133,
   206,96
```

Listing 2

```
fast":GOTO 280
HK 260 POKE 711,186:IF RPM=288 THEN ? "pe
   rfect";CHR$(129):GOTO 280
OZ 270 ? "   okay   "
HH 280 IF T<N THEN 200
5X 290 MEAN=SUM/N:SIGMA=0:FOR I=1 TO N:SI
   GMA=SIGMA+(MEAN-R(I))*(MEAN-R(I)):NEXT
    I
AM 300 STDEV=SQR(SIGMA/(N-1)):IF STDEV>9.
   99 THEN STDEV=9.99
PH 310 TEMP=MEAN:L=6:N$="   .00":GOSUB 33
   0:POSITION 3,2:? "MEDIAN OF LAST ";N;"
    RUNS: ";N$;" RPM"
EF 320 TEMP=STDEV:L=4:N$=" .00":GOSUB 330
   :? :? "STANDARD DEVIATION: ";N$;" RPM
   ":T=0:SUM=0:GOTO 200
PT 330 T$=STR$(INT(TEMP*100+0.5)/100):D=L
   EN(T$)+1:FOR I=1 TO LEN(T$):IF T$(I,I)
   ="." THEN D=I
5D 340 NEXT I:N$(L-D-1,L)=T$:RETURN
BD 1000 GRAPHICS 0:POKE 559,0:POKE 16,0:P
   OKE 53774,0:POKE 752,1:POKE 82,6:POKE
   83,39
XH 1010 POKE 708,12:POKE 709,28:POKE 710,
   0:N=10:HZ=60:IF PEEK(53268)<14 THEN HZ
   =50
ZR 1020 FACTOR=HZ*30*60:DIM R(N),ML$(70),
   T$(6),N$(6)
TN 1030 ML$="[illegible]"
AB 1040 DL=PEEK(560)+256*PEEK(561):POKE D
   L+3,70:POKE DL+6,6:FOR I=DL+11 TO DL+1
   4:POKE I,6:NEXT I
KJ 1050 POSITION 1,0:? "disk speed checke
   r":? "COPYRIGHT 1983 Garry Francis"
IU 1060 DM=PEEK(88)+256*PEEK(89)+200:HI=I
   NT(DM/256):LO=DM-256*HI:POKE 88,LO:POK
   E 89,HI
MR 1070 POKE 770,82:POKE 772,0:POKE 773,4
   :POKE 778,1:POKE 779,0:POKE 559,34:RET
   URN
```

Listing 3

```
0100 ;#######################################
0110 ;# SOURCE CODE FOR ML STUFF IN #
0120 ;#     DISC SPEED CHECKER      #
0130 ;#      by Garry Francis       #
0140 ;#       Copyright 1983        #
0150 ;#######################################
0160 ;
0170 ;Code is relocatable, so may be stor
   ed
0180 ;in a string (e.g. ML$).  Assembled
    to
0190 ;page 6 for convenience only.
0200 ;
0210 ;Call from BASIC using:
0220 ;     X=USR(ADR(ML$))
0230 ;
0240 RTCLOK=$12
0250 DSTATS=$0303
0260 CONSOL=$D01F
0270 DSKINV=$E453
0280 COUNT=$CB
0290  *=$600
0300  PLA ;Remove no. of arguments from s
   tack
0310  LDA #5 ;Allow 5 revolutions to get
    up to speed
0320  STA COUNT ;Store in zero page count
   er
0330 LOOP1 JSR DSKINV ;Call disk handler
0340  LDA DSTATS ;Check error code
0350  BMI EXIT ;Return if any errors
0360  LDA CONSOL ;Check if console keys a
   re pressed
0370  AND #6 ;Test Bits 1 (SELECT) & 2 (O
   PTION)
0380  EOR #6 ;Complement bits
0390  STA $CC ;Save result for BASIC
0400  BNE EXIT ;Return if either was pres
   sed
0410  DEC COUNT ;Decrement counter
0420  BNE LOOP1 ;Continue until finished
    5 revs
0430  LDA #30 ;Now do 30 revolutions
0440  STA COUNT
0450  LDA #0 ;Reset real-time clock
0460  STA RTCLOK+2 ;Low byte
0470  STA RTCLOK+1 ;Middle byte (high byt
   e not used)
0480 LOOP2 JSR DSKINV ;Similar to above
0490  LDA DSTATS
0500  BMI EXIT
0510  LDA CONSOL
0520  AND #6
0530  EOR #6
0540  STA $CC
0550  BNE EXIT
0560  DEC COUNT
0570  BNE LOOP2
0580  LDA RTCLOK+2 ;Save time for BASIC
0590  STA $CD ;Low byte
0600  LDA RTCLOK+1
0610  STA $CE ;Middle byte
0620 EXIT RTS ;Return to BASIC
0630  .END
```

HOW TO USE SPEED CHECK

Once you have a completely bug-free copy of Speed Check on disk, run it by typing RUN "D:SPEED.BAS" (or whatever filename you've used) from BASIC. The program is self explanatory and extremely simple to use. You may care to read these detailed instructions once, but will probably never need them again.

When the program has loaded, you will see a fairly bare title screen. About two thirds of the way down the screen is the message line. All prompts and error messages will occur on this line. The initial prompt requests you to enter the number of the drive you wish to test. You would normally respond by pressing 1 to test the speed of drive 1. You do not have to press the RETURN key. If you have more than one drive, you can test the other drives by pressing 2, 3 or 4 as appropriate. Any response apart from the numbers 1 to 4 will be ignored.

After selecting the drive number, you will be prompted to insert a formatted disk into the drive selected in the first step. (The drive number is always displayed in messages so that you can keep track of things.) You can use any formatted disk for testing the speed. The program will only read sector 1. The disk will never be written to or altered in any way, so you can leave the Speed Check disk installed if you wish. However, you will probably feel better psychologically if you use a blank disk or some other unimportant disk.

Notice that there is now also a menu beneath the message line. Once the formatted disk is installed, you may press any of the console keys shown in the menu to carry out the indicated function. These may be pressed in any order and at any time. Their effect will be immediate.

START: START does what its name implies – it starts the test. After pressing START, a message such as 'TESTING DRIVE 1' will be displayed on the message line. The drive spurts to life and the speed test begins. The program allows 5 revolutions for the drive to get up to speed, then times the next 30 revolutions using the real time clock. The test number and the resultant speed are printed in large letters.

The speed is rounded to the nearest integer, but a more accurate result is kept internally for use later on. Immediately below this is a diagnostic message to give you an indication of whether the speed is alright. The optimum speed is 288 r.p.m. This will be reflected by the message PERFECT!. Any other speed within the acceptable range of 285-290 r.p.m. will be given the message OKAY. If the speed is below 285 r.p.m., you'll get the message TOO SLOW and if the speed is above 290 r.p.m., you'll get the message TOO FAST. A message of TOO SLOW or TOO FAST may mean that the drive needs adjusting. Note that the messages are colour-keyed to reflect this. Red means the drive needs adjusting, whereas green means it's okay.

The program now repeats this cycle continuously until you press SELECT, OPTION or SYSTEM RESET.

At the end of each group of 10 tests, the results are submitted to some standard statistical procedures to determine their mean and standard deviation. The results are printed below the diagnostic message. These results are further discussed under 'Analysing Test Results'.

continued overleaf

SELECT: SELECT is used to pause the test so that you can take notes, change disks, answer the telephone, grab a cup of coffee or whatever. After pressing SELECT, a message such as 'TEST PAUSED ON DRIVE 1' will be displayed on the message line and the drive will stop. This does not affect the test in any way. It may be continued from where you left off by pressing START or you may choose to re-run the program by pressing OPTION.

OPTION: OPTION is normally used to change the drive number. It returns you to the first screen and is, in effect, the same as re-running the program from the beginning. The screen is cleared and all previous test results are lost.

Other Keys: The keyboard has been 'idiot-proofed' to ensure that you can't press the wrong key. The BREAK key is disabled at all times. The rest of the keyboard is also disabled except for the period when selecting the drive number. CTRL-1 has no effect. All of this has one interesting side effect. If there is no user input for about 9 minutes on NTSC systems or 11 minutes on PAL systems, the random colour switching of the attract mode will come into effect. It is unlikely that you'd be running the program for this long, but if you do and you find the random colours annoying, you can press any of the console keys that would be valid at that time and the display will return to normal. As the keyboard is disabled, pressing a key will not kill the attract mode as you would normally expect.

The only way to abort the program and return to BASIC is to press SYSTEM RESET. This was done to ensure that all system parameters are properly reset.

ANALYSING TEST RESULTS

The accuracy of the testing procedure is determined by the real time clock. As this is only accurate to one jiffy (1/50th second on PAL systems or 1/60th second on NTSC systems), the individual test results become accurate to about plus or minus two jiffies. This works out to be somewhat less than plus or minus 0.2 revolutions per test (remembering there are 35 revolutions per test), so the integer test results may fluctuate slightly. If your test results are consistently in the green area, then your drive's speed is okay. As mentioned above, the optimum speed for Atari disk drives is 288 r.p.m., but anything between 285 and 290 r.p.m. is acceptable.

It is important to take note of the mean and standard deviation of each 10 test results. The mean should be well within the 285-290 limits and the standard deviation should be less than (say) 1 r.p.m. If the standard deviation is consistently over 1 r.p.m., then your drive motor is suffering from excessive fluctuation and may need servicing.

Bad Readings

There are two situations when an unreliable test result will occur. The first is due to a bug in the Revision A operating system of the Atari 400/800 computers which occasionally causes a device on the serial bus to 'go to sleep'. It will be quite apparent when this happens, because the beep...beep...beep of sector 1 being read will come to a stop. If the drive is inactive for very long, it will stop spinning and the busy light will go out. *Do not touch anything*. The drive will come back to life after a variable amount of time, but the result for that test will be ridiculously low. Simply ignore this figure. This bug was ironed out in the XL/XE operating systems, hence XL/XE owners should not encounter this situation.

The second situation comes about when you adjust the speed while the test is being carried out (see next issue). Again, simply ignore this figure and wait for the next one.

In both these cases, remember that the mean and standard deviation will be affected and should also be ignored. If you like, you can press OPTION to re-run the program and clear out the bad results.

Troubleshooting

Speed Check has been thoroughly tested and is believed to be totally bug free. The only possible errors that can occur are as a result of attempts to communicate with the disk drive via the Serial Input/Output facility (SIO). The causes of these errors and the possible recovery are discussed below. This is *not* light reading. You may need to read up on SIO in order to understand some of these descriptions. Refer to the Operating System User's Manual (Part No. CO16555) pages 130 to 140-D and the Hardware Manual (Part No. CO16555) pages II.25 to II.27.

Of the 6 possible errors generated by SIO, the only ones you are likely to encounter are errors 138 and 144. When an error occurs, a message such as 'ERROR 138...TEST ABORTED ON DRIVE 1' will be displayed on the message line. Once the source of the error has been corrected, simply press START to continue from where the program left off or press OPTION to re-run the program from the first screen.

ERROR MESSAGES – CAUSE AND RECOVERY

ERROR 138 – Device Timeout
Cause: When the computer sent a command frame to the specified drive, the drive did not send an acknowledgement within the time limit set by SIO. This is usually because the specified drive does not exist, but may also occur if the command frame checksum calculated by the drive does not agree with the checksum sent by the computer.
Recovery: You may have specified the wrong drive number. Check the drive number indicated in the error message. If it is not the drive you meant to test, press OPTION to re-run the program and set the correct drive number. If this is not the problem, then:

- Check that the drive is plugged in, power is on and the drive is turned on (indicated by the 'power on' light).
- Check that the I/O cable between the computer and the drive is connected and working correctly, particularly lines 2, 5 and 7.
- Check that the drive select switches at the back of the drive are set correctly.

If all else fails, you may have the checksum problem, which would indicate a garbled command frame from the computer. This is rare and may indicate a hardware problem.

ERROR 139 – Device NAK
Cause: The drive could not carry out the command frame sent by the computer because it contained an invalid command or the auxiliary bytes referred to an unaddressable sector.
Recovery: As Speed Check only reads sector 1, this error should not occur. If it does, you may have a hardware problem.

ERROR 140 – Serial Bus Input Framing Error
Cause: There were extra or missing data bits received by the computer. (All serial communications are done using an asynchronous signal. Each byte of data is transmitted and

received as 8 bits of serial data preceded by a logic zero start bit and followed by a logic one stop bit.)
Recovery: This is a very rare error which occurs when the data from the drive is garbled. Check that the I/O cable between the drive and the computer is functioning correctly – particularly line 3. Alternatively, there may be a hardware problem.

ERROR 142 – Serial Bus Data Frame Overrun Error
Cause: A byte of data received by the computer 'overran' the previous byte of data because the microprocessor had not responded fast enough to deal with the first byte.
Recovery: Again this is a rare error which may indicate a hardware problem.

ERROR 143 – Serial Bus Data Frame Checksum Error
Cause: The checksum of the last data frame sent by the drive does not agree with the checksum calculated by the computer. Either the data or the checksum itself may be garbled.
Recovery: This is a common error with cassette I/O, but it shouldn't happen very often with disk drives. Check the I/O cable (particularly line 3) and try again. If the error persists, it may be due to a hardware problem.

ERROR 144 – Device Done Error
Cause: The drive could not execute a valid command. This will usually occur if the drive cannot locate the required sector – in our case, sector 1. The error will probably be preceded by a terrible graunching noise from the stepper motor of the drive as it travels to the innermost track, then returns to track 0 to reattempt the operation. It will make 3 attempts before generating the error message.
Recovery: The inability to find the sector may be because there is no disk in the drive or it is not inserted properly (in which case you should properly insert a disk and try again), the disk is not formatted (replace with a formatted disk) or sector 1 of the disk is damaged (use a different disk). The various manuals tell you that this error results from attempting to write to a write protected disk. Don't panic! This would be true under normal circumstances, but it is not applicable in our case. You can rest assured that Speed Check never writes to a disk.

HOW SPEED CHECK WORKS

The program is written entirely in Atari BASIC except for one machine language routine. It is split into 2 distinct blocks – the main program and the initialisation.

The initialisation is contained in a subroutine (lines 1000-1070) and is executed by the GOSUB 1000 in the first line of the program. It begins by disabling Direct Memory Access (DMA), the keyboard and the BREAK key, making the cursor invisible, setting the margins and colours and initialising a couple of variables. This is all fairly straightforward. It then checks the hardware register PAL at memory location 53268 ($D014) to determine whether the program is running on a PAL system or NTSC. If it is PAL, then bits 1, 2 and 3 will be clear (i.e. logic zero). If it is NTSC, then these bits will be set (i.e. logic true). (According to the hardware manual, bit 0 is not used, but it is always equal to one on my PAL system. The remaining bits are also supposedly not used, but they are equal to zero on my system).

If the system is PAL, then it is assumed that the power supply is 50Hz and hence the real-time clock RTCLOK at memory location 18-20 ($12-$14) is updated 50 times per second. If the system is NTSC, then the power supply must be 60 Hz and the real-time clock is updated 60 times per second. The variable HZ is set accordingly.

The array for storing the test results and a few strings are then dimensioned. The machine language routine is relocatable, so it is stored in a string ML$.

The display list is modified to include a few lines of GRAPHICS 1. The title and copyright information is printed and the operating system's pointer to the start of display memory is moved up in memory by 200 bytes so that the title is not cleared upon execution of the clear screen command.

Finally, the Device Control Block (DCB) is set up to read sector 1 into the cassette buffer, DMA is re-enabled and control is returned to the main program. This entire process takes a fraction of a second.

The main program is fairly straightforward until you reach the machine language routine at line 200. The assembly language source code for this routine is given in listing 3. This is supplied for informative purposes only. You do not need to type it in.

The routine begins by reading the same sector five times to allow the drive to get up to speed. Each time it reads the sector, it checks to see whether there were any errors. If there were, it returns to BASIC. It also checks to see whether the SELECT or OPTION keys were pressed. If they were, it again returns to BASIC. At the end of the five revolutions, it resets the real-time clock and repeats the above process, but for 30 revolutions instead of five. If successful, the time is saved and control is returned to BASIC. Note that the code for the two sets of tests is virtually identical. This was coded 'in-line' instead of as two calls to a subroutine in order to make the whole thing relocatable.

Once BASIC gets control again, it checks to see whether the machine language routine completed successfully. There are three possible outcomes:

- The machine language routine terminated early because of an error. This will be indicated by DSTATS at memory location 771 ($303). A one indicates no error. Any other number indicates the error code.
- The machine language routine was terminated early because the user pressed SELECT or OPTION. This will be indicated by memory location 204. 0 means nothing was pressed. 2 means SELECT was pressed. 4 means OPTION was pressed.
- The machine language routine completed successfully, in which case the test result is displayed and the program continues on as described earlier.

The statistical calculations are fairly straightforward. Some users may find the subroutine at lines 330-340 to be useful. Its purpose is to round off the decimal number in TEMP and fiddle it so that it is right justified with two digits after the decimal point. For example, 0 becomes 0.00, 9.1 becomes 9.10, 2.47321 becomes 2.47, 3.0694 becomes 3.07 and so on.

Next Issue

Next issue, I'll explain how to adjust your drive's speed if Speed Check indicates that it's running too fast or too slow. See you then! ●

Flying High

by **Allan Knopp**

Welcome to Flying High in which you must help Freddy explore rooms, burst balloons and find how to access the 'mystery box' in the centre of the screen.

Freddy is controlled by a joystick in port 0. He can walk left or right and, by pushing the stick up, he can fly upwards using the propeller on his hat. Conveyors may help him along (or they may not!). The object is to make Freddy visit each section of every screen at least once whilst trying to pop balloons and avoid the 'Zapper'. Much of the challenge of the game is to work out the correct route to reach all screens as some sections can only be reached in a certain way.

Freddy starts out with five lives and loses one each time he is touched by the Zapper. He gets an extra life when he pops five and ten balloons but loses all lives if he runs out of fuel. At least ten balloons must be popped during the game but it does not matter if they are popped by Freddy or by the Zapper. Once Freddy has popped ten balloons and visited every section of each screen, he must find his way back to screen one to touch the object in the 'mystery box'.

Flying High is not a fast action game but will take a while to puzzle out. Keep an eye on the status line at the top of the screen which is updated whenever you enter a new room and remember to keep Freddy flying high!

```
EI 1 REM ******************************
UE 2 REM *        FLYING HIGH         *
LR 3 REM *            by              *
IS 4 REM *        ALLAN KNOPP         *
EC 5 REM * -------------------------- *
IZ 6 REM *  PAGE 6 MAGAZINE - ENGLAND *
EO 7 REM ******************************
NN 8 REM
FV 100 DIM A$(40):A$="▲▲▲▲▲▲▲▲▲▲▲▲
   ▲▲▲▲▲▲▲▲▲▲"
SA 105 DIM B$(40):B$="()()()()()()()()()()
   ()()()()()()()()"
TA 110 POKE 710,112:POKE 752,1:? "K":? "J
   ust a few seconds please...."
DZ 115 GOSUB 470:GOTO 1535
NX 120 GRAPHICS 0:POKE 708,106:POKE 709,1
   0:POKE 710,34:POKE 711,172:POKE 752,1:
   POKE 82,0
RL 125 DL=PEEK(560)+256*PEEK(561)+4
XO 130 FOR I=2 TO 24:POKE DL+I,4:NEXT I
ZQ 135 GOSUB 595
VC 140 GOSUB 1270:GOSUB 1285:SCR=1:POKE 7
   06,118
FJ 145 X=128:Y=64:BB=81:CC=14:POKE 53256,
   1:BAL=0:FUEL=350:LI=5
HR 150 POSITION 0,0:? " ROOM  ";SCR;:POSI
   TION 8,0:? " HITS  ";BAL;:? " FUEL
   ";FUEL;:? " L ";LI:IF SCR>1 THEN 160
RB 155 GOTO 165
AG 160 XXI=16-INT(RND(0)*32):YYI=16-INT(R
   ND(0)*32):SP=ZAP:SOUND 0,5,8,14:A=USR(
   MOVE,0,PMB,SP,XXX,YYY,11)
IO 165 S=STICK(0)
VY 170 IF X<48 THEN X=48
KX 175 IF X>194 THEN X=194
RC 180 IF Y<16 THEN Y=16
EB 185 IF Y>98 THEN Y=98
WP 190 FOR SO=0 TO 3:SOUND SO,0,0,0:NEXT
   SO:POKE 77,0
HE 195 XI=(S=7 AND X(194)*2-(S=11 AND X>4
   8)*2:GX=(X-48)/4:GY=(Y-16)/4:IF GX<1 T
   HEN GX=1
LV 200 IF S=14 THEN SOUND 3,115,12,4
JT 205 IF S=7 OR S=11 THEN SOUND 2,40,8,4
IL 210 IF X<50 OR X>192 THEN GOTO 935
NO 215 IF Y<18 OR Y>96 THEN GOTO 1010
JV 220 LOCATE GX,GY+2.5,C
OG 225 LOCATE GX+1.5,GY+1,E:LOCATE GX+0.5
   ,GY,D
YV 230 LOCATE GX-0.5,GY+1,F:LOCATE GX-0.5
   ,GY,G
XD 235 SOUND 2,0,0,0
GB 240 IF PEEK(53261)=0 AND PEEK(53260)>0
    THEN GOSUB 660
PD 245 IF PEEK(53261)>0 THEN GOSUB 635
CW 250 IF PMP=PM4 OR PMP=PM6 OR PMP=PM0 T
   HEN GOSUB 420
MO 255 IF D<>ASC(" ") AND S=14 THEN YI=0:
   GOTO 325
QJ 260 IF S=14 THEN SOUND 3,120,12,8:PMP=
   PM0:PMPP=PM1:YI=-3:FUEL=FUEL-1:GOTO 32
   5
LC 262 IF FUEL<0 THEN LI=0:GOTO 690
IU 265 IF E<>ASC(" ") AND S=7 THEN XI=0
ZZ 270 IF F<>ASC(" ") AND S=11 THEN XI=0
AW 275 IF G<>ASC(" ") AND S=11 THEN XI=0
BD 280 IF C=ASC(" ") THEN Y=Y+3
YC 285 IF C=ASC("\") THEN GOTO 870
YU 290 IF C=ASC("/") THEN GOTO 880
NV 295 X=X+XI
QO 300 IF Y<16 THEN Y=16
AB 305 IF Y>104 THEN Y=104
UB 310 IF S=7 THEN PMP=PM6:PMPP=PM7
PH 315 IF S=11 THEN PMP=PM4:PMPP=PM5
VX 320 IF S=15 THEN PMP=PM0:PMPP=PM1:SOUN
   D 3,0,0,0
QF 325 Y=Y+YI:YI=0:XXX=XXX+XXI:YYY=YYY+YY
   I
SX 330 CC=CC+16:IF CC>254 THEN CC=14
FS 335 POKE 705,CC
TO 340 IF XXX<48 THEN XXX=48
AZ 345 IF XXX>194 THEN XXX=194
QA 350 IF YYY<16 THEN YYY=16
FL 355 IF YYY>98 THEN YYY=98
PL 360 A=USR(MOVE,2,PMB,PMP,X,Y,11)
GU 365 A=USR(MOVE,3,PMB,PMPP,X,Y,11)
ES 370 A=USR(MOVE,1,PMB,BB,XX,YY,11)
RO 375 A=USR(MOVE,0,PMB,SP,XXX,YYY,11)
NF 380 X=X+XI
```

```
VI 385 GOSUB 450
HN 390 IF S=7 OR S=11 THEN SOUND 0,40,8,4
QG 395 A=USR(MOVE,2,PMB,PMP,X,Y,11)
FU 400 A=USR(MOVE,3,PMB,PMPP,X,Y,11)
RY 405 IF RND(0)>0.6 AND SCR>1 THEN GOTO
   160
KO 410 IF PEEK(53279)=3 THEN ? "K":GOTO 1
   40
QW 415 GOTO 165
KL 420 IF S=11 THEN PMP=PM2:PMPP=PM3
YZ 425 IF S=7 THEN PMP=PM8:PMPP=PM9
PD 430 IF S=14 THEN PMP=PM10:PMPP=PM11
PV 435 A=USR(MOVE,2,PMB,PMP,X,Y,11)
GC 440 A=USR(MOVE,3,PMB,PMPP,X,Y,11)
ZX 445 RETURN
MS 450 IF BB=B1 THEN BB=B2:SP=SP2:RETURN
PU 455 IF BB=B2 THEN BB=B3:SP=SP3:RETURN
LR 460 IF BB=B3 THEN BB=B1:SP=SP1:RETURN
GT 465 REM * P.M. MOVE ROUTINE. ANALOG *
CD 470 DIM PMMOV$(100),P0$(30),P1$(30),P2
   $(30),P3$(30),P4$(30),P5$(30),P6$(30),
   P7$(30),P8$(30),P9$(30),P10$(30)
CJ 475 DIM P11$(30),P12$(30),P13$(30),P14
   $(30),BAL1$(12),BAL2$(12),BAL3$(12),SP
   1$(12),SP2$(12),SP3$(12),ZAP$(12)
XL 480 RESTORE 705
LZ 485 MOVE=ADR(PMMOV$):FOR X=1 TO 100:RE
   AD N:PMMOV$(X)=CHR$(N):NEXT X:REM *REA
   D ML DATA*
HA 490 REM * READ SHAPE DATA *
ZE 495 RESTORE 725
MT 500 FOR X=1 TO 11:READ N:P0$(X)=CHR$(N
   ):NEXT X
OJ 505 FOR X=1 TO 11:READ N:P1$(X)=CHR$(N
   ):NEXT X
OX 510 FOR X=1 TO 11:READ N:P2$(X)=CHR$(N
   ):NEXT X
QN 515 FOR X=1 TO 11:READ N:P3$(X)=CHR$(N
   ):NEXT X
RB 520 FOR X=1 TO 11:READ N:P4$(X)=CHR$(N
   ):NEXT X
SR 525 FOR X=1 TO 11:READ N:P5$(X)=CHR$(N
   ):NEXT X
TF 530 FOR X=1 TO 11:READ N:P6$(X)=CHR$(N
   ):NEXT X
UV 535 FOR X=1 TO 11:READ N:P7$(X)=CHR$(N
   ):NEXT X
VJ 540 FOR X=1 TO 11:READ N:P8$(X)=CHR$(N
   ):NEXT X
WZ 545 FOR X=1 TO 11:READ N:P9$(X)=CHR$(N
   ):NEXT X
HF 550 FOR X=1 TO 11:READ N:P10$(X)=CHR$(
   N):NEXT X
IW 555 FOR X=1 TO 11:READ N:P11$(X)=CHR$(
   N):NEXT X
KB 560 FOR X=1 TO 11:READ N:BAL1$(X)=CHR$
   (N):NEXT X
LT 565 FOR X=1 TO 11:READ N:BAL2$(X)=CHR$
   (N):NEXT X
MJ 570 FOR X=1 TO 11:READ N:BAL3$(X)=CHR$
   (N):NEXT X
SF 575 FOR X=1 TO 11:READ N:SP1$(X)=CHR$(
   N):NEXT X
SU 580 FOR X=1 TO 11:READ N:SP2$(X)=CHR$(
   N):NEXT X
UL 585 FOR X=1 TO 11:READ N:SP3$(X)=CHR$(
   N):NEXT X
QP 590 FOR X=1 TO 11:READ N:ZAP$(X)=CHR$(
   N):NEXT X
WB 595 PMBASE=INT((PEEK(145)+3)/4)*4:POKE
    54279,PMBASE:REM *** SET UP P/M AREA
   ***
QW 600 PMB=PMBASE*256
DX 605 PM0=ADR(P0$):PM1=ADR(P1$):PM2=ADR(
   P2$):PM3=ADR(P3$):PM4=ADR(P4$):PM5=ADR
   (P5$):PM6=ADR(P6$):PM7=ADR(P7$)
NE 610 PM8=ADR(P8$):PM9=ADR(P9$):PM10=ADR
   (P10$):PM11=ADR(P11$):PM12=ADR(P12$):P
   M13=ADR(P13$):PM14=ADR(P14$)
MK 615 SP1=ADR(SP1$):SP2=ADR(SP2$):SP3=AD
   R(SP3$):B1=ADR(BAL1$):B2=ADR(BAL2$):B3
   =ADR(BAL3$):ZAP=ADR(ZAP$)
IQ 620 POKE 559,46:POKE 53277,3:REM *** P
   /M DMA ***
NL 625 POKE 623,33
BZ 630 POKE 705,255:POKE 706,118:POKE 707
   ,58:RETURN
ND 635 XX=10:YY=10:A=USR(MOVE,1,PMB,BB,XX
   ,YY,11)
KM 640 FOR SO=15 TO 0 STEP -0.5:SOUND 0,5
   5,0,SO:POKE 712,SO:NEXT SO:SOUND 0,0,0
   ,0:BAL=BAL+1
KH 645 IF BAL=5 OR BAL=10 OR BAL=15 THEN
   LI=LI+1
FF 650 POKE 53278,1:POKE 53261,0:POKE 532
   60,0
AB 655 RETURN
KX 660 IF RMA=1 AND RMB=1 AND RMC=1 AND R
   MD=1 AND RME=1 AND RMF=1 AND RMG=1 AND
    RMH=1 AND BAL>9 THEN TR=1
QI 665 IF TR=1 AND SCR=1 THEN GOTO 1120
VI 670 FOR SO=223 TO 0 STEP -16:SOUND 0,5
   0,12,14:POKE 707,SO:POKE 706,250-SO:NE
   XT SO
XF 675 POKE 707,58:POKE 706,118:SOUND 0,0
   ,0,0
PS 680 XXX=120:YYY=40:A=USR(MOVE,0,PMB,SP
   ,XXX,YYY,11)
GA 685 POKE 53278,1:POKE 53261,0:POKE 532
   60,0
VM 690 LI=LI-1:IF LI<1 THEN GOTO 1120
AJ 695 RETURN
NJ 700 REM * P.M. MOVE ROUTINE ANALOG *
UI 705 DATA 216,104,104,104,133,213,104,2
   4,105,2,133,206,104,133,205,104,133,20
   4,104,133,203,104,104,133,208
HV 710 DATA 104,104,133,209,104,104,24,10
   1,209,133,207,166,213,240,16,165,205,2
   4,105,128,133,205,165,206,105
IP 715 DATA 0,133,206,202,208,240,160,0,1
   62,0,196,209,144,19,196,207,176,15,132
   ,212,138,168,177,203,164
KU 720 DATA 212,145,205,232,169,0,240,4,1
   69,0,145,205,200,192,128,208,224,166,2
   13,165,208,157,0,208,96
QE 725 REM * FACING FRONT *
HH 730 DATA 54,8,28,0,0,20,127,127,62,54,
   119
CW 735 DATA 62,0,0,42,62,8,0,8,65,0,0
KQ 740 REM * FACING LEFT - WALKING *
ZA 745 DATA 54,8,28,0,0,0,30,62,50,51,119
SX 750 DATA 62,0,0,23,63,12,0,0,12,0,0
MW 755 REM * FACING LEFT - STANDING *
IC 760 DATA 54,8,28,0,0,0,30,62,38,12,28
XC 765 DATA 62,0,0,23,63,12,0,0,24,0,0
YC 770 REM * FACING RIGHT - STANDING *
IE 775 DATA 54,8,28,0,0,0,60,62,50,24,28
YO 780 DATA 62,0,0,58,63,12,0,0,12,0,0
PJ 785 REM * FACING RIGHT - WALKING *
SE 790 DATA 54,8,28,0,0,0,60,62,50,102,11
   9
ZF 795 DATA 62,0,0,58,63,12,0,0,12,0,0
RF 800 REM * PROP TURNING *
IJ 805 DATA 8,8,28,0,0,20,127,127,62,54,1
   19
RH 810 DATA 8,0,0,42,62,8,0,8,65,0,0
DD 815 REM * BALLOON *
TW 820 DATA 0,56,100,116,124,56,16,16,16,
   16,0
WQ 825 DATA 0,0,112,200,232,248,112,32,32
   ,16,16
LY 830 DATA 28,50,58,62,28,8,8,16,16,0,0
XX 835 REM * SPARKS *
NP 840 DATA 36,66,153,36,153,66,36,0,0,0,
   0
QM 845 DATA 66,153,36,66,36,153,66,0,0,0,
   0
JU 850 DATA 153,36,66,153,66,36,153,0,0,0
   ,0
TM 855 REM * ZAP *
LL 860 DATA 224,32,64,144,232,56,47,45,7,
   4,4
QV 865 REM * MOVE ALONG CONVEYOR *
HQ 870 X=X-2:SOUND 0,X,10,10:GOTO 885
SH 875 GOTO 870
HC 880 X=X+2:SOUND 0,X,10,10:GOTO 885
JU 885 IF X<50 OR X>192 THEN GOTO 935
NV 890 IF Y<18 OR Y>96 THEN GOTO 1010
IJ 895 GX=(X-48)/4:GY=(Y-16)/4
SC 900 LOCATE GX,GY+2.5,CD
PU 905 A=USR(MOVE,2,PMB,PMP,X,Y,11)
GB 910 A=USR(MOVE,3,PMB,PMPP,X,Y,11)
MS 915 IF STICK(0)=14 THEN Y=Y-4:GOTO 295
MG 920 IF CD=ASC("\") THEN GOTO 870
WI 925 IF CD=ASC("/") THEN GOTO 880
DY 930 IF CD<>ASC("\") OR CD<>ASC("/") TH
   EN GOTO 295
FK 935 REM * SCREEN SELECT ROUTINE *
GA 940 FOR SO=0 TO 3:SOUND SO,0,0,0:NEXT
   SO
KK 945 IF GY<10 OR GY>13 THEN GOTO 220
BG 950 ? "K":GOSUB 1270:IF X<50 THEN GOTO
    960
SF 955 IF X>192 THEN GOTO 985
WI 960 IF SCR=1 THEN SCR=2:GOSUB 1340:GOS
   UB 1090:RMA=1:XX=96:YY=24:GOTO 1105
WY 965 IF SCR=2 THEN SCR=3:GOSUB 1385:GOS
   UB 1090:RMB=1:XX=100:YY=24:GOTO 1105
HD 970 IF SCR=3 THEN SCR=1:GOSUB 1285:GOS
   UB 1090:XX=10:YY=10:GOTO 1105
NN 975 IF SCR=4 THEN SCR=2:GOSUB 1340:GOS
   UB 1095:RMC=1:XX=180:YY=24:GOTO 1105
CD 980 IF SCR=5 THEN SCR=2:GOSUB 1340:GOS
   UB 1100:RMA=1:XX=56:YY=24:GOTO 1105
DP 985 IF SCR=1 THEN SCR=3:GOSUB 1385:GOS
   UB 1085:RMB=1:XX=100:YY=24:GOTO 1105
NU 990 IF SCR=2 THEN SCR=1:GOSUB 1285:GOS
   UB 1085:XX=10:YY=10:GOTO 1105
FA 995 IF SCR=3 THEN SCR=2:GOSUB 1340:GOS
   UB 1085:RMA=1:XX=96:YY=24:GOTO 1105
CD 1000 IF SCR=4 THEN SCR=3:GOSUB 1385:GO
   SUB 1095:RMB=1:XX=100:YY=24:GOTO 1105
OR 1005 IF SCR=5 THEN SCR=3:GOSUB 1385:GO
   SUB 1100:RMD=1:XX=180:YY=74:GOTO 1105
YT 1010 FOR SO=0 TO 3:SOUND SO,0,0,0:NEXT
    SO
OK 1015 IF GX<17 OR GX>20 THEN GOTO 220
YM 1020 ? "K":GOSUB 1270
FD 1025 IF Y<18 THEN GOTO 1035
FN 1030 IF Y>96 THEN GOTO 1060
YH 1035 IF SCR=1 THEN SCR=4:GOSUB 1435:GO
   SUB 1100:RME=1:XX=180:YY=24:GOTO 1105
HY 1040 IF SCR=2 THEN SCR=4:GOSUB 1435:GO
   SUB 1085:RMF=1:XX=56:YY=24:GOTO 1105
WV 1045 IF SCR=3 THEN SCR=4:GOSUB 1435:GO
   SUB 1090:RME=1:XX=140:YY=30:GOTO 1105
XL 1050 IF SCR=4 THEN SCR=5:GOSUB 1485:GO
   SUB 1100:RMG=1:XX=56:YY=24:GOTO 1105
AF 1055 IF SCR=5 THEN SCR=1:GOSUB 1285:GO
   SUB 1100:XX=10:YY=10:GOTO 1105
EB 1060 IF SCR=1 THEN SCR=5:GOSUB 1485:GO
   SUB 1095:RMH=1:XX=180:YY=96:GOTO 1105
SI 1065 IF SCR=2 THEN SCR=5:GOSUB 1485:GO
   SUB 1085:RMG=1:XX=56:YY=24:GOTO 1105
MK 1070 IF SCR=3 THEN SCR=5:GOSUB 1485:GO
   SUB 1090:XX=140:YY=96:GOTO 1105
WR 1075 IF SCR=4 THEN SCR=1:GOSUB 1285:GO
   SUB 1095:XX=10:YY=10:GOTO 1105
XJ 1080 IF SCR=5 THEN SCR=4:GOSUB 1435:GO
   SUB 1095:RMF=1:XX=104:YY=54:GOTO 1105
RC 1085 X=50:Y=56:RETURN
RP 1090 X=190:Y=56:RETURN
LQ 1095 X=122:Y=20:RETURN
WR 1100 X=122:Y=90:RETURN
IS 1105 REM
PP 1110 A=USR(MOVE,2,PMB,PMP,X,Y,11)
ZV 1115 A=USR(MOVE,3,PMB,PMPP,X,Y,11):GOT
```

```
0 150
PF 1120 SC=FUEL+BAL*20+LI*200:IF SC>HSC THEN HSC=SC
GK 1125 ? "K":POSITION 0,0:? "SCORE ";SC;" HI ";HSC;" |PRESS START|"
KB 1130 FOR SO=0 TO 3:SOUND SO,0,0,0:NEXT SO:IF TR=1 THEN GOSUB 1710
IE 1135 IF LI<1 THEN GOTO 1225
JP 1140 FOR Y=Y TO 25 STEP -2:GOSUB 1220:NEXT Y
IH 1145 FOR X=X TO 80 STEP -2:GOSUB 1220:NEXT X
CT 1150 FOR Y=25 TO 80 STEP 2:GOSUB 1220:NEXT Y
VQ 1155 FOR X=80 TO 160 STEP 2:GOSUB 1220:NEXT X
SO 1160 FOR Y=80 TO 64 STEP -2:GOSUB 1220:NEXT Y
ML 1165 FOR X=160 TO 126 STEP -2:GOSUB 1220:NEXT X
NS 1170 FOR Y=64 TO 30 STEP -1:GOSUB 1220:NEXT Y
SJ 1175 XXX=10:YYY=10:A=USR(MOVE,0,PMB,SP,XXX,YYY,11)
HV 1176 GOSUB 1675
ZQ 1180 FOR SO=0 TO 3:SOUND SO,0,0,0:NEXT SO
EU 1185 IF PEEK(53279)<>6 THEN 1185
HZ 1190 XXI=0:YYI=0
SP 1195 XXX=10:YYY=10:A=USR(MOVE,0,PMB,SP,XXX,YYY,11)
TC 1200 POKE 53278,1:POKE 53261,0:POKE 53260,0
KZ 1205 LI=5:POKE 706,194:TR=0:RMA=0:RMB=0:RMC=0:RMD=0:RME=0:RMF=0:RMG=0:RMH=0
JI 1210 ? "K":GOTO 140
GI 1220 SOUND 0,X+Y,10,10:POKE 706,X+Y:A=USR(MOVE,2,PMB,PMP,X,Y,11):A=USR(MOVE,3,PMB,PMPP,X,Y,11):RETURN
RR 1225 POKE 706,14:FOR Y=Y TO 0 STEP -1.5:SOUND 0,10*Y,12,10:X=X+XZ:GOSUB 1265:NEXT Y
HJ 1230 SOUND 0,0,0,0
ZM 1235 IF PEEK(53279)<>6 THEN 1235
HM 1240 XXI=0:YYI=0
UK 1245 XXX=120:YYY=48:A=USR(MOVE,0,PMB,SP,XXX,YYY,11)
TR 1250 POKE 53278,1:POKE 53261,0:POKE 53260,0
LO 1255 LI=5:POKE 706,194:TR=0:RMA=0:RMB=0:RMC=0:RMD=0:RME=0:RMF=0:RMG=0:RMH=0
JX 1260 ? "K":GOTO 140
VU 1265 A=USR(MOVE,2,PMB,PMP,X,Y,11):A=USR(MOVE,3,PMB,PMPP,X,Y,11):RETURN
TE 1270 POSITION 0,1:? B$:POSITION 0,22:? A$
KN 1275 COLOR ASC("▐"):PLOT 0,2:DRAWTO 0,21:PLOT 38,2:DRAWTO 38,21
OE 1280 COLOR ASC(" "):PLOT 0,10:DRAWTO 0,13:PLOT 38,10:DRAWTO 38,13:RETURN
MB 1285 REM * DRAW SCREEN ONE *
TM 1287 IF RMA=1 AND RMB=1 AND RMC=1 AND RMD=1 AND RME=1 AND RMF=1 AND RMG=1 AND RMH=1 AND BAL>9 THEN TR=1
FL 1290 SCR=1:POKE 704,56:XXX=120:YYY=48:XX=10:YY=10:XXI=0:YYI=0
HK 1295 COLOR ASC("◘")
KN 1300 RESTORE 1330
TA 1305 FOR P=1 TO 13:READ X0,Y0,X1,Y1:PLOT X0,Y0:DRAWTO X1,Y1:NEXT P
ZC 1310 COLOR ASC("\"):PLOT 0,13:DRAWTO 5,13:PLOT 21,21:DRAWTO 37,21:PLOT 4,21:DRAWTO 17,21
IU 1315 COLOR ASC("/"):PLOT 33,13:DRAWTO 38,13
WQ 1320 IF TR=0 THEN COLOR ASC("♥"):PLOT 17,10:DRAWTO 22,10:PLOT 18,11:DRAWTO 22,11
BF 1325 RETURN
JE 1330 DATA 4,8,12,8,27,8,34,8,1,17,5,17,9,15,13,15,26,15,30,15,34,17,37,17,12,17,26,17,17,9,17,6,17,6,22,6,22,6
JX 1335 DATA 22,9,16,9,16,5,16,5,23,5,23,5,23,9
YH 1340 REM * SCREEN TWO *
KW 1345 SCR=2:XXX=120:YYY=40:POKE 704,191
QF 1350 RESTORE 1365
HA 1355 COLOR ASC("◘")
RO 1360 FOR P=1 TO 11:READ X0,Y0,X1,Y1:PLOT X0,Y0:DRAWTO X1,Y1:NEXT P
EE 1365 DATA 4,5,16,5,1,9,13,9,9,13,17,13,17,13,17,2,18,9,37,9,24,2,24,5,28,5,37,5,24,14,24,17,21,17,27,17,21,21
ZQ 1370 DATA 37,21,1,14,5,14
AX 1375 COLOR ASC("\"):PLOT 0,13:DRAWTO 5,13:PLOT 34,13:DRAWTO 38,13:PLOT 35,17:DRAWTO 28,17:PLOT 21,17:DRAWTO 3,17
GW 1380 COLOR ASC("/"):PLOT 1,21:DRAWTO 17,21:RETURN
ST 1385 REM * SCREEN THREE *
FL 1390 SCR=3:XXX=120:YYY=40:POKE 704,214
LR 1395 RESTORE 1410
FT 1400 COLOR ASC("◘")
RA 1405 FOR P=1 TO 10:READ X0,Y0,X1,Y1:PLOT X0,Y0:DRAWTO X1,Y1:NEXT P
HH 1410 DATA 4,5,8,5,15,5,17,5,22,5,24,5,31,5,35,5,6,9,12,9,16,9,23,9,27,9,29,9,1,18,5,18,10,17,34,17,1,21,17,21
YT 1415 COLOR ASC("/"):PLOT 0,13:DRAWTO 30,13:COLOR ASC("\"):PLOT 21,21:DRAWTO 37,21
JO 1420 PLOT 31,13:DRAWTO 38,13:COLOR ASC(" "):PLOT 2,13:DRAWTO 5,13:PLOT 35,13:DRAWTO 36,13
BW 1425 COLOR ASC("◘"):PLOT 1,14:DRAWTO 5,14:DRAWTO 5,12:PLOT 35,12:DRAWTO 35,14:DRAWTO 38,14
AQ 1430 RETURN
VW 1435 REM * SCREEN FOUR *
YF 1440 SCR=4:XXX=120:YYY=40:POKE 704,78
OG 1445 RESTORE 1460
GI 1450 COLOR ASC("◘")
RP 1455 FOR P=1 TO 10:READ X0,Y0,X1,Y1:PLOT X0,Y0:DRAWTO X1,Y1:NEXT P
KX 1460 DATA 4,9,7,9,8,5,17,5,13,9,19,9,0,13,21,13,31,5,34,5,28,6,31,6,26,7,28,7,27,12,31,12,35,13,38,14,32,16,35,16
TW 1465 COLOR ASC("\"):PLOT 6,17:DRAWTO 37,17:PLOT 0,13:DRAWTO 4,13
IN 1470 COLOR ASC("*"):PLOT 22,2:DRAWTO 22,13
QV 1475 COLOR ASC("/"):PLOT 3,21:DRAWTO 17,21
BF 1480 RETURN
HQ 1485 REM * SCREEN FIVE *
LL 1490 SCR=5:XXX=120:YYY=65:POKE 704,222
MI 1495 RESTORE 1510
FV 1500 COLOR ASC("◘")
SM 1505 FOR P=1 TO 12:READ X0,Y0,X1,Y1:PLOT X0,Y0:DRAWTO X1,Y1:NEXT P
PY 1510 DATA 1,9,13,9,13,9,13,17,13,17,5,17,1,21,16,21,18,5,33,9,35,14,25,17,27,5,27,8,32,5,32,9,31,13,31,15,26,14
GT 1515 DATA 26,17,1,13,9,13,28,21,33,21
VO 1520 COLOR ASC("\"):PLOT 4,5:DRAWTO 13,5:PLOT 22,21:DRAWTO 27,21:PLOT 34,21:DRAWTO 37,21
KE 1525 COLOR ASC("▐"):PLOT 17,2:DRAWTO 17,14:DRAWTO 22,14:DRAWTO 22,21
AS 1530 RETURN
YW 1535 REM * TITLE SCREEN *
LM 1540 ? "K"
QS 1545 ST=PEEK(560)+PEEK(561)*256:POKE ST+26,130:POKE ST+6,7:POKE ST+8,6:POKE ST+9,6:POKE ST+10,7
OG 1550 RESTORE 1560
HC 1555 PP=1536:FOR PG=PP TO PP+10:READ BT:POKE PG,BT:NEXT PG
GV 1560 DATA 72,169,210,141,10,212,141,24,208,104,64
MY 1565 POKE 512,0:POKE 513,6:POKE 54286,192
PR 1570 POKE 710,32:POKE 709,152
RQ 1575 POSITION 12,0:? " PAGE 6 PRESENTS "
KG 1580 POSITION 5,1:? "flying high          written by"
NI 1585 POSITION 1,2:? "Allan Knopp          FEATURING          freddy "
DM 1590 POSITION 2,5:? "Freddy is trapped in a maze of rooms. To escape he must gain access to the "
EY 1595 POSITION 2,7:? "energy field which is trapped in the "
ZE 1600 POSITION 2,8:? "centre of room number 1. To achieve  this he must visit each part of each "
YK 1605 POSITION 2,10:? "room at least once. He must also pop at least 10 balloons. Opposing him in"
GM 1610 POSITION 2,12:? "his task is the ZAPPER.  When Freddy"
ZV 1615 POSITION 2,13:? "has visited each part he must return to room number 1 and touch the energy "
VL 1620 POSITION 2,15:? "field. Freddy has 5 lives and a limit "
QI 1625 POSITION 2,16:? "to the fuel supply for his propellor."
MU 1627 POSITION 2,17:? "You will find a map very helpful. Any balloons popped by the ZAPPER will be "
GA 1628 POSITION 2,19:? "added to Freddy's total."
OF 1630 POSITION 1,20:? "PRESS START TO BEGIN GAME          OPTION TO RESTART DURING GAME"
QF 1635 PMP=PM0:PMPP=PM1
IV 1640 X=155:FOR Y=100 TO 40 STEP -1:GOSUB 1660:SOUND 0,Y,10,10
PR 1645 NEXT Y:SOUND 0,0,0,0
AC 1650 IF PEEK(53279)<>6 THEN 1650
PL 1655 GOTO 120
KA 1660 A=USR(MOVE,2,PMB,PMP,X,Y,11):A=USR(MOVE,3,PMB,PMPP,X,Y,11)
NK 1665 IF PMP=PM0 THEN PMP=PM10:PMPP=PM11:RETURN
FN 1670 IF PMP=PM10 THEN PMP=PM0:PMPP=PM1:RETURN
QB 1675 REM * SOUNDS *
FI 1680 FOR SOX=170 TO 5 STEP -5
HJ 1690 FOR SO=0 TO 246 STEP SOX:SOUND 0,SO,10,15:SOUND 1,SO+8,10,15:SOUND 2,SO+16,10,15:SOUND 3,SOX,10,15
YA 1695 POKE 710,SO:NEXT SO:NEXT SOX
AN 1700 RETURN
SF 1710 REM * THE END *
DL 1715 POKE 752,1:RESTORE 1720:COLOR ASC("◣"):FOR P=1 TO 44:READ X0,Y0,X1,Y1:PLOT X0,Y0:DRAWTO X1,Y1:NEXT P
SG 1720 DATA 9,8,15,8,9,9,9,15,9,15,9,11,9,11,13,12,9,12,13,13,9,13,13,17,8,17,13,18,8,18,13,19,8,19,13,20,10,20,10
XV 1730 DATA 21,8,21,13,22,8,22,13,23,8,23,13,25,8,25,13,26,8,26,13,27,8,27,13,28,8,30,8,30,8,30,9,28,12,30,12
WK 1735 DATA 28,13,30,13,28,10,28,10,9,15,9,20,10,15,10,20,11,15,11,20,12,15,14,15,14,15,14,16,12,17,12,17,12,19
KI 1740 DATA 14,19,12,20,14,20,16,15,16,20,17,15,17,20,18,15,18,20,19,16,19,17,20,17,20,18,21,15,21,20,22,15,22,20
XD 1750 DATA 23,15,23,20,25,15,25,20,26,15,26,20,27,15,27,20,28,15,29,15,29,15,29,20,28,19,28,20,30,16,30,19
BF 1760 RETURN
```

★

RAMBIT

HIGH SPEED CASSETTE LOADER

For 1010, 410, XC11 or Phonemark cassette

review by Derryck Croker

Rambit is the Rambo of the cassette based system. Strong words perhaps, but more than borne out when put to the test. Just to whet your appetite, I converted two games to the Rambit format, and booted them. After a very short normal speed boot with the familiar loading sound, the screen turned black, and a 'loading' message appeared which was accompanied by rapidly changing characters along with what I can only describe as the sound of rushing water. This was the the game being loaded into memory. Just 53 seconds later the first game was running. Compare this with the original, which took 3 minutes 45 seconds! The second game, which before conversion took 5 minutes 05 seconds to load, was running just 1 minute after conversion. This game, though, had to be changed to single load before it could be converted to the Rambit format. More on this later.

WHAT IS RAMBIT?

What do you get for your £18? The Rambit system consists of a small circuit board containing an IC and a small handful of components, and a tape containing the conversion utility program which is designed to be used either on its own or with an Assembler/Editor cartridge. You will need this cartridge to assist in altering multi-stage load tapes to single stage before converting them to the Rambit format.

The circuit board is easily fitted inside your cassette unit. There are 5 leads to be soldered to the printed circuitry, and my 1010 required that a track be cut and a wire link and capacitor be installed. The instructions give a step-by-step guide, and a diagram of the tracks is supplied to assist in the connection of the leads from the interface board. One black mark, there was no mention of which way round the capacitor should go, but in fact this does not matter. If you prefer, you can have Rambit install this board for you. Without this interface converted programs will not load, and at the moment Rambit will not convert BASIC programs however the interface in no way interferes with normal usage of the cassette unit.

So what is the Rambit format? You probably already know that the normal baud rate for loading Atari tapes is a mere 600 baud whereas most modern machines use 1200 or 2400 baud rates. Tapes converted to Rambit format all have a short normal speed boot section at the front of the tape which then controls the loading of the program itself loading it at the incredible speed of 3300-3600 baud. Rambit's loader program loads into Page 0 and the lower half of the stack on Page 1 so that most of the computer's memory can be loaded without fear of overwriting the loader program.

When used in conjunction with an Assembler/Editor cartridge, Rambit will also save assembled machine code in the high-speed format. The resulting tape can be booted in just the same manner as a game, and it will automatically run if you have loaded RUNAD in your code. You are required to include the binary file identification bytes, normally automatically included with your assembled program when saved to tape, so you may prefer to save your code from the Assembler/Editor directly to tape in the normal fashion, and then load it back with Rambit for conversion. The loader program for these binary files loads Page 7 and the lower half of Page 8, and the appropriate loader is automatically added by Rambit.

Rambit's function, then, is to save consecutive areas of memory or single or compound files produced by the Assembler/Editor cartridge at the 3300-3600 baud rate mentioned. Single stage load tapes follow Rambit's conventions already, so converting these is a matter of using the utility's 'L' command to load the original, and the 'S' command to save the converted program to a blank tape. A verification facility allows the checking of the new tape's loading ability. A variety of other commands, many of which bear a close similarity to those in the Assembler/Editor cartridge allow one to display and alter memory.

MULTI-STAGE CASSETTES

Multi-stage programs require to be changed to single stage first. The instructions give a guide as to how to do this, but basically you have to use the Assembler/Editor cartridge with the utility to load the first stage in order to locate where the main section is to be loaded and from where it should be done. Once this has been accomplished, the main section is loaded with the 'L' command and then you have to add the boot address information to the start of the program in memory. A study of the instructions together with a good memory map, such as Compute's 'Mapping the Atari', and preferably the Atari Technical Notes will be of assistance here. The standard boot format will allow only 256 blocks or 32K to be loaded, but Rambit uses the otherwise unused first byte to allow blocks of over 256 to be loaded, one of the reasons that multi-stage programs are often used. This block count will be found in locations $98 and $99 according to the length of the program loaded. Free transfer between the utility and the Assembler cartridge is possible without problem.

CONCLUSION

Make no mistake, Rambit is a very powerful system but it requires at least a nodding acquaintance with machine code and one or other of the two books mentioned to get the best from it. ●





Cloudhead by Mo Warden

Reviews

CAD 3-D
STAR STRUCK
K-GRAPH
K-RESOURCE

DISKS and all you need to know about them

CARTRIDGES and how to make them

Now available worldwide:
Prospero's professional language compilers for STs

PRO PASCAL & PRO FORTRAN-77:
FOR ATARI ST AND SINCLAIR QL

USE THE LANGUAGES THE PROFESSIONALS USE: PASCAL AND FORTRAN.
C is high on performance but low on safety, structure, portability and maintainability. Pascal is excellent for education and for long-term projects. Fortran gives you access to hundreds of existing programs – and uses established programming skills!

ISO-PASCAL
Pro Pascal is validated to ISO 7185 / ANSI 770X3.97 Class A (no errors) on the Z80 processor under CP/M and the 8088 processor under PC-DOS. This provides a guarantee that the compiler is complete and works perfectly.

FORTRAN-77
Pro Fortran-77 is a full implementation of ANSI Fortran–77 with no omissions and many useful extensions. Validation is imminent.

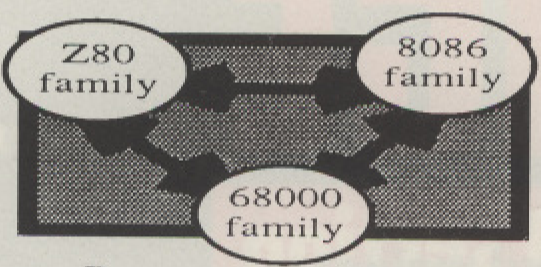
Prospero Compilers Work!
No known bugs when we ship - so you don't have to program around the holes.

"Lazy I/O" for interactive use.

Good Housekeeping
All files closed on exit from procedure

Hand-coded library
Produces compact and efficient programs.

Ideal for
- software developers
- universities and colleges
- government and industry
- students of computing
- development of personal skills
- solving technical problems
- training institutions



Prospero compilers: portable source code

16 digit accuracy
Single and double precision IEEE format arithmetic gives 7 or 16 digit precision.

50,000 Lines Big
Compiles big programs >50,000 lines... >5,000 identifiers...Separate compilation to build libraries and massive program suites.

Compilers include
- compiler
- linker
- run-time libraries
- librarian
- X-ref program
- sample programs
- 200+ page manual

GEM
Full GEM AES and VDI bindings supplied with Atari products.

Pascal «—» Fortran
Interlinkable code means you can use the best of both languages. Ask for details.

We Specialise
At Prospero we specialise in writing language compilers. We produce the best possible compilers, conforming to the appropriate standard, and giving programmers a secure base on which to build.

Quote: "Pro Pascal is not only ISO-validated, it is also a superb-quality and very full software development tool." Personal Computer World Nov 1985

Prospero compilers are used at more than 6000 sites around the world.

It's easy to order!
Credit card holders phone 01-741 8531, Mastercard, Visa, Diners & Amex accepted. Prospero's compilers are also available from good software dealers and distributors worldwide.

Reviews & Info
Call 01-741 8531 or write in for a free info pack with datasheets and magazine reviews.

New: Pro Fortran-77 for MS-DOS will be available in August/September 86.

Software distributors
Contact us for our Worldwide Distribution Guide.

UK trade distributors:

PC:	Xitan 0703-871211
	Software Ltd 01-278 2377
	First Software 0256 463344
Atari:	Silica Distribution 01-309 0300
	European Software 01-253 3303
Amstrad:	Software Toolshop 0525-718271
QL:	Strong Computer 0267-231246
	Micro Anvika 01-636 2547

Call for worldwide distributor list.

Mail order service
Send this coupon with cheque to Prospero Software Ltd, 190 Castelnau, London SW13 9DH, England. Add 15% VAT in UK or £5 shipping outside UK. Allow 28 days for delivery.

Please supply (enter number required):
____ Pro Fortran-77 for Atari ST at £129.
____ Pro Pascal for Atari ST at £129.
Also available:
____ Pro Fortran-77 for Sinclair QL at £86.91
____ Pro Pascal for Sinclair QL at £86.91.
____ Pro Fortran-77 for MS-DOS at £420.
____ Pro Pascal for MS-DOS at £320.
____ Pro Pascal for CP/M-86 at £320.
Special offer till 1/10/86: both Atari compilers for £229.
I enclose payment of £____.
Name..
Address..
....
Country..
Telephone No..
In case of query call 01-741 8531 or telex 8814396. Tick product name if you just require information! P6 11/86

Prospero Software
LANGUAGES FOR MICROCOMPUTER PROFESSIONALS

190 CASTELNAU, LONDON SW13 9DH, ENGLAND TEL 01-741 8531 TELEX 8814396

THE LATEST ST SOFTWARE NEWS
IN THE FORM OF A ROUNDUP BY LES ELLINGHAM OF THIS YEARS PCW SHOW

The Personal Computer World Show of 1986 turned out to be the showpiece for the ST with around 95% of the Atari area devoted to ST products and with a fair number of exhibitors on the main floor also showing or announcing ST products. Rather than offering a direct commentary on the show itself, I will concentrate on reporting those items of software and hardware that have recently become available or that you should be seeing soon. Bear in mind that this summary excludes the vast majority of American software, as there were few direct American exhibitors, so this really is only the tip of the iceberg!

Let's start with Atari. You have probably read it elsewhere but the main announcements were **2Mb** and **4Mb** versions of the ST called (unsurprisingly) the **2080ST** and **4160ST**. Prices with mono monitors are £1149 and £1459 respectively. Perhaps more interesting to existing owners was the **'Blit' chip** which increases the speed of graphics processing up to six-fold. Atari states that this will be available from authorised dealers for £60 plus VAT as an upgrade kit for the complete range of ST computers. Software from Atari included **dbMAN**, a dBASE III clone for just £99 and **FASTCOM** a GEM terminal program with just about every facility you may need for communications in an easy to use format. Price is £49. Atari also had a catalogue of ST software for sale. It looked interesting but as they wanted me to pay the full retail price of £14.95 for the privilege of reviewing it for you (and thereby gaining more sales for them) I declined the offer. I am not paying £14.95 for a catalogue without knowing if it is worth it, how about you?

Jeff Minter from Llamasoft is working on an enhanced version of **Colourspace**, now that he has learned more of the capabilities of the machine and this should be out quite soon.

Anco Software appear to have a licensing deal with Artworx from the U.S.A., a company that produced several Atari 8-bit titles in the early days and then seemed to disappear. The one interesting thing that sets Anco apart is price. For the first time you will now be able to get software for as low as £12.95! At this price is **Trivia ST** for two to four players, **Peggamon** which is a new approach to backgammon, a graphics adventure called **Willy The Kid** and **Flip Flop**, another version of Reversi. At £19.95 comes the old Artworx classic, **Strip Poker** plus **ST Golf, Thai Boxing** and an arcade game entitled **Space Pilot**. It seems that golf and karate are all the rage at the moment.

Timeworks concentrates on the professional side of computing with a word processor, a database and spreadsheet. The word processor, **Word Writer ST** includes three spell checkers and an integrated outliner and uses full GEM interfacing. The specification looks very interesting for the price. **Data Manager ST** is a flexible database which again uses GEM and includes charts, reports and sample applications. Finally **SwiftCalc ST** is a standard spreadsheet with graphics supporting 8192 rows by 256 columns and some interesting graphics and other features. Each program is £74.95 and they can be interfaced with one another.

Rainbird was showing the long awaited **Starglider** which is a Star Raiders style intergalactic exploration selling for £24.95. Many game lovers raved about this one as the star of the show. Rainbird also have The Pawn and the Level 9 collection of adventures, Jewels of Darkness.

Cumana were over in the business hall and may have been missed by many ST owners. Their single and dual 1Mb 3/2" drives were on display but most interest centered around **a combined 5/4" and 3/2" drive** allowing software developers or owners of IBM PC's to access a wider range of software from one unit. A spokesman for the company also promised something 'very interesting' for the ST shortly, but declined to give any further details!

U.S.Gold should be releasing several titles for the ST soon, including Microprose's established classic flight simulators and others. **Silent Service** is already available. Two major coin-op games coming are **Gauntlet** and **Xevious** which should add a sparkle to any gamesters eye!

Grafox were on the Atari stand with an ST version of **Logistix** an integrated database, spreadsheet and timesheet which has received very good reviews in the more serious computer press. Some regard this as the best spreadsheet of all so its conversion to the ST is a welcome sign of acceptance of the machine by the major serious software producers.

Picked up somewhere was a leaflet on an arcade adventure from System 3 entitled **Dominator** of which little was explained and two games, **Bangkok Knights** and **The Last Ninja** which they classified as 'addictive computer game' and 'exciting computer game' respectively. Is that enough to make you rush out and buy?

Robtek have recently signed an agreement with Shanner Corporation in the U.S.A. and caused the greatest excitement with the long awaited **Mac-Emulator** which they call **Ultra-68k**. This is being cleverly marketed as an upgrade to the Mac with instructions to remove the chips from your own Mac to gain the advantage of the faster processing and greater capacity of the ST. Fair enough if you already have access to a Mac and software which you can port across but how long will it be before all of the existing Mac software has its equivalent on the ST? Robtek also have a number of other ST products including a **Real Time Clock, Macro Manager, Colorwriter**, a unique word processor using colour to highlight and distinguish text. Also a **Professional Midi Sequencer** and a **Games Compendium**. A lot of product worth checking out.

Microdeal continue to push out product unabated and seem to be getting the right balance between quality and quantity. To detail

MORE ON PAGE 35

SOFTWARE EXPRESS

COME AND SEE US AT OUR RETAIL SHOWROOMS

514-516 Alum Rock Road, Alum Rock, Birmingham Tel.: 021-328 3585

MAGAZINES & BOOKS

ANALOG — ANTIC — ATARI USER — F.A.S.T.E.R. — PAGE 6 — ST USER

START NOW IN! £14.95 FOR MAGAZINE & DISK.

BACK ISSUES OF ANALOG & ANTIC — PHONE US & HAGGLE!!

NEW! ST GRAPHICS & SOUND. ST MACHINE LANGUAGE. AND MANY MORE! — SEND FOR A COMPLETE LIST.

HARDWARE

20 MEG. HARD DISK, 520 STM, 520 STM + (1 MEG), 1040 ST, CUMANA 1 MEG. DRIVES (SINGLE & DOUBLE), NEW ATARI PRINTERS: XMM 801 (8-BIT), SMM 804 (16-BIT), HABA ST DIGITISER (PRO VERSION) £249.95 REAL TIME CLOCK CARTRIDGE £49.95. WE ALSO SUPPLY STANDS, COVERS, CABLES, DISKS AND DISK BOXES.

WE ARE NOW DEALERS FOR CASIO CZ 230S SYNTHESISER – BUILT IN RHYTHM UNIT – 100 INSTRUMENTS – IDEAL FOR USE WITH THE ATARI ST COMPUTERS

8-BIT SOFTWARE

B-GRAPH	CRUSADE IN EUROPE	WARRIORS OF RAS
REPLAY	TECHNICOLOUR DREAM	PRINT SHOP COMPANION
DIGI-DRUM	BOULDERDASH II	ATARI WRITER PLUS
SYNCALC	QUESTRON	PARTY QUIZ
BASIC XE	ULTIMA IV	SPY VS SPY II
MAC-65	POLAR PIERRE	PITSTOP II

ROM CARTRIDGES – TRACK & FIELD (INC. CONTROLLER), FINAL LEGACY, TENNIS, ROBOTRON —ALL £9.95 MILLIPEDE £17.95

ST SOFTWARE

SILENT SERVICE	PHONE	PAINTWORKS	£34.95
LEADER BOARD	PHONE	ANIMATOR	£29.95
FLIGHT SIM.II	PHONE	ALTERNATIVE	£29.95
WINTER GAMES	£24.95	MACRO MANAGER	PHONE
PHANTASIE (SSI)	£39.95	K-SWITCH	PHONE
CAD-3D	£49.95	K-MINSTREL	PHONE
I.S. TALK	£49.95	K-RESOURCE	PHONE
FOREM	£99.95	TREESOFT RECORDER	£79.95
THUNDER	£39.95		

COMING SOON!

XL/XE	520 STM/1040 ST
PLANETARIUM	PLANETARIUM
STAR RAIDERS II	STAR RAIDERS
LEATHER GODDESS*	BATTLE ZONE
MOONMIST*	JOUST
SHANG-RI-LA*	SUPER HUEY
GHOSTBUSTERS (Cassette)	DEGAS ELITE
*INFOCOM	1ST WORD PLUS

PHONE BEFORE ORDERING

TO CHECK OUR LATEST PRICE OFFERS!

DEALER ENQUIRIES INVITED.

ALL PRICES INCLUDE V.A.T.

Please send me your Price List

Name ....

Address ....

....

Tel. ....

I own an XL/XE/520/1040/NONE

MORE NEWS FROM THE PCW SHOW

everything fully would take a whole page but look out for **Karate Kid II** with superb graphics, a shuttle simulation, **Trivia Challenge**, **Electronic Pool**, **Pinball Factory**, a new **BBS** program, a British **Payroll** program and **a back-up system for Hard Disks**. There will undoubtedly be more added to what is already the widest collection of ST software from any manufacturer.

One of the most talked about accessories came from Computer Concepts. **Back-Pack** is a ROM based set of accessories comprising a calculator, clock and alarms, a diary, notepad and typewriter as well as an address book, a printer buffer and ramdisk. Being a cartridge, no extra RAM is used by the accessories which are always available. Disadvantage at the moment is that you can't also plug in a real time clock although others are working on multi socketted plug in boards to solve the problem. Price is £49. Computer Concepts also have **Fast Basic** on ROM which also received a lot of favourable comment.

Silicon Chip finally launched their long awaited **STAccounts** which has a very impressive specification and uses GEM. Containing Sales Ledger, Purchase Ledger, Stock Control and Nominal ledger, the package is aimed at the small businesses and, with extensive help facilities, should be easy enough for most businessmen to use. Launch price was £150 plus VAT.

My choice for star of the show was undoubtedly Mirrorsoft and from comments received at the PAGE 6 stand, a lot of people agreed. Mirrorsoft had three incredible packages, two graphics programs and a desktop publishing program that will head the whole desktop publishing market. The graphics packages are **Art Director** and **Film Director** and they are quite simply the very best so far for the ST. Over a year in development by Andromeda in Hungary, Art Director is a truly top-class professional graphics program with applications from creative fun to commercial mock-up and visuals. Film Director can take images from Art Director and animate them in almost any way. The results are professional enough for full video use and the ease of use has to be seen to be believed. The prices are £49.95 and £59.95 respectively which is truly a fraction of the real worth of programs of this quality.

To explain **Fleet Street Publisher** would take pages. Just take my word that it is the most advanced desktop publishing program to yet appear on any standard micro. One or two things still need to be completed but I can't wait to begin to use it and will bring you a full review in due time.

Professional musicians must be delighted with the ST for a couple of companies were demonstrating how the machine can be used in the music studio to achieve results which would normally require equipment costing 10 times the price. Steinberg Research had **Pro-24 Midi Sequencer** and Hybrid Arts also showed a sequencer as well as a 16-bit sound sampler that sampled at the same speed as a compact disk. Samples were taken which were indistinguishable from the original and which could then be easily edited with the mouse. N-n-n-nineteen probably took a long time to do, but on the ST you could achieve the same result in a few seconds!

A gentleman from Avila Associates had a small table on the Atari stand to show **Make It Move**, an excellent system for producing slide shows, animated business reports and more from Neochrome or Degas pictures. Anybody could produce a 'script' outlining a presentation or just use it for fun to enhance their own artwork. U.S. price is $49.95 but your retailer will be able to confirm his own price. Continuous updates are promised making it a very powerful program.

Another couple of products which gained a lot of attention were a **Video-Digitiser** and **The Sound Master** professional sound-digitiser from Print Technik in Vienna. Quality on both was excellent with a superb sound and graphics demo disk that many (including me) thought was a video cassette. The Video-Digitiser is now being distributed in this country now by Haba.

If you need a cheap clock for your ST, a British company producing one is Tregarthen Systems in Gloucester. Called **ST Timepiece** it retails at £34.44 including VAT.

Infocom, now part of Activision, continue to produce their acclaimed range of adventures on the ST. By the time you read this two new adventures should be available, **Leather Goddesses of Phobos** and **Moonmist**. The first begins a new Infocom Comedy genre with three 'naughtiness' levels to select yourself and Moonmist is an interactive fiction tale of ghosties and ghoulies. Both are £29.99

Miracle Technology now have a comms package available which is GEM based and fully supports Prestel. **SuperTerm** has all the usual features and costs £52.13 plus VAT. An inclusive package of the WS4000 auto-dial, auto-answer modem and software is available at £199.95 exclusive of VAT.

Eidersoft who had previously produced Mission Mouse, one of the few mono games for the ST came in with an unexpected bang with five games all running in colour and featuring full optional midi sound. **ST Karate** topped the bill with digitised sound. **ST Protector** is a platform style game as is **Space Station** which features 3D action. Other arcade titles include **War Zone** and **Fire Blaster**. If the software lives up to the packaging (which is superb) there should be a feast for ST gamers.

What about books? There weren't that many but one that arrived mid way through the show looks like being the best yet. From Glentop it is called **The Concise Atari ST 68000 Programmer's Reference Guide** and gives an excellent guide for the programmer. Glentop have at least eight other titles which we will bring you details of in due course. First Publishing continue to expand their range of ABACUS books and are now supplementing these with software from the same company. Finally one from Sybex to look out for is **Understanding the Atari ST** a 'combined tutorial and reference guide'.

And there was more .... **Mercenary** from Novagen, a number of new things from Kuma, upgrades from Haba and a whole host of stuff that I did not get a chance to see or for which literature was not available. A chap from Germany even showed me something called GFA BASIC which, as demonstrated, was a BASIC running as fast as C. Is that enough to keep you interested for now? ●

ATARI ST

QUALITY SOFTWARE at SOFTER PRICES!

WHY PAY MORE – FOR LESS!
FOR USE WITH ALL COMPUTERS IN THE ATARI ST SERIES
HOTTEST SELLING ST PRODUCT IN THE USA

ATARI REAL TIME CLOCK CARTRIDGE
Constantly keeps time and date accurate to the second. Plugs into cartridge port. Software included to set system clock and calendar. Never lose track of files again. **£49.95**

ATARI ST TOOLKIT
ROBTEK TOOLKIT consists of 6 utilities that use the GEM environment. They will help you in a very simple way to get more speed and power from your St computer.
● PRINTER SPOOLER: This utility makes it possible to use your computer while you are printing.
● RAM DISK: This utility will speed up your file operations, saving you hours of time.
● DISK COPY: Is a utility that helps you make backups and format disks at a much easier and faster speed than normal.
● DISK UTILITIES: Are a set of three programs that will help you to control and organise your disk directories. It is now very easy to keep an accurate library of all your disks. **£29.95**

ATARI ST-KEY
Marvelously versatile GEM Desk Accessory for Function-key macros. Customize 20 function keys (normal and shift) for up to 2000 keystrokes from *within any* application. Save and load settings. **£24.95**

THE 8 TRACK PROFESSIONAL MIDI SEQUENCER
Equal to a professional recording studio. Includes step-time recording, auto-correct, edit phrases, filter, auto punch-in for track editing, MIDI set, includes full and easy to use tutorial, hints and tips. **£149.95**

ATARI MACRO MANAGER
Gives you the ULTIMATE personal time management tool for your daily work environment. Now you can incorporate true desktop organization, information mgmt., time accounting and auto dialing to your Atari ST computer system . . . and do it all in conjunction with most other ST programs. **£39.95**
Robtek's version of sidekick

ATARI COLOR WRITER
GEM-based, full featured, word processor. Also includes multicolor screen text, and high-lighting capability. Multiple ways to select a screen block. Unique insert/replace mode. Search Color feature and much more. **£29.95**

ATARI DB-CALC
An excellent easy to use database with built in calculating facilities specially designed to take full advantage of the Gem Environment and other elegant features built into your ST computer. "Best database programme of the year in Holland and Belgium". **£49.95**

VERSIONS IN FRENCH, GERMAN AND SPANISH

COMING SOON GAMES COMPENDIUM AND ACCOUNTS PACKAGE

Robtek

Robtek Ltd., Unit 4, Isleworth Business Complex, St. Johns Road, Isleworth, Middx. TW7 6NL. Tel: 01-847 4457

DISKS

ALL YOU NEED TO KNOW ABOUT THE ST FLOPPY DISK

For those of you who have gone from the 8-bit Atari computers to the 16-bit ST's there have been many surprises for you in the past few months and there are many (obvious) differences between the two systems. One of the great advantages of the ST is the ability to store 360k of data on a single sided disk. What joy! One of the initial disappointments is that, not knowing how this data is stored, you cannot play around with sector editors and the like as you used to on that old 810. Fear not, in this article we hope to point you in the right direction so that you can begin to understand how to get out of those disk problems that are bound to occur at some stage.

SECTOR LAYOUT

The ST disk is divided into 80 tracks (0 to 79) with 9 sectors per track (1 to 9) and is written in QUAD density (512 bytes per sector). When a disk is formatted, a Boot sector (track 0, sector 1), the File Allocation Table (starting at track 0, sector 2) and the Directory (track 1, sector 3) are established using all 18 sectors in the first two tracks. The remaining sectors (tracks 2 to 79, sectors 1 to 9) are initialised in pairs or by cluster with two sectors equaling one cluster. As a cluster is initialised, the File Allocation Table (F.A.T.) is updated to indicate the status of the cluster. This continues until all 351 data clusters have been completed. If a cluster cannot be formatted or initialised the corresponding entry in F.A.T. is marked 'not-available' and will remain that way until the disk is re-formatted or thrown away. If a cluster is marked as bad, the F.A.T. entry will contain a number between $FF0 and $FF7. That range of numbers simply means the cluster is unusable and will never be used to store data.

The ST disk uses track 2, sector 1 through track 79, sector 9 to store any files that you write to the disk and all filenames are listed on the disk directory in the order they are entered. The directory is seven sectors long and has room for 112 entries with each entry being 32 bytes in length. Each entry contains the filename and extension, the files Attributes, the Time the last change was made to the file, the Date the last change was made, the number of the first cluster in the file and the length, in bytes, of the file. In addition there are 10 bytes that have been reserved for future use (Figure 1).

1)	Filename	8 bytes	bytes 0 to 7
2)	Filename Ext.	3 bytes	bytes 8 to 10
3)	Attributes	1 byte	byte 11
4)	Reserved	10 bytes	bytes 12 to 21
5)	Time of last change	2 bytes	bytes 22 and 23
6)	Date of last change	2 bytes	bytes 24 and 25
7)	First Cluster number	2 bytes	bytes 26 and 27
8)	File size (in bytes)	4 bytes	bytes 28 and 31

Figure 1 ST Directory Fields

DIRECTORY ENTRIES

The Filename and Extension are the first two fields in each entry of the directory. They take up the first 11 bytes of an entry and follow the same format as the Atari 800 or the IBM PC, with one small exception. If the first character of an entry is $E5, the file has been deleted and is no longer available for your use. If no changes have been made to the disk since the file was deleted, it may be possible to recover it by using one of the many sector editors available.

The Attributes field is one byte long and contains a number that indicates any special or unique characteristics about this entry. There are only five bits of the entry used on the floppies at this time and they are listed in Figure 2. The next field is marked RESERVED and is 10 bytes long. This field will be filled with 00's on all disk entries and no plans for its use are known at this time.

The Time of Last Change field is 2 bytes long and is updated each time you write to a file. This field contains the HOURS, MINUTES and SECONDS of the last change to the file. This field is in the low byte, high byte format and uses all 16 bits. Starting with the highest bit, it uses 5 bits for the hour, 6 bits for the minutes and the last 5 bits for the seconds. The value in the seconds portion of the field must be multiplied by 2 to get the correct seconds count.

Bit 0	Read Only (not set if file is Read/Write)
Bit 1	Hidden
Bit 2	System
Bit 3	Volume Label (Name assigned to the disk)
Bit 4	Sub Directory (Folder name)
Bit 5	Archive (this will be used on Hard Disks)
Bits 6 & 7 are not used at this time.	

Figure 2 File Attributes

The Date of Last Change field is handled almost the same as the previous filed. This field is changed along with the Time of Last Change and is also in the low byte, high byte format. Starting with the highest bit, it uses 7 bits for the year, 4 bits for the month and the last 5 bits for the day. Don't be surprised when the year equals a 5 or 6 (as most files will) because the year stored has 1980 subtracted from it.

The First Cluster field contains the number of the first cluster used for the file. The cluster information is stored in high byte, low byte order and should never go above $15F since there are only 351 clusters.

The File Size field is a value equal to the number of bytes used in the file. This number divided by 1024 (1k) will tell you how many clusters are being used for the file (cluster * 2 = sectors).

continued overleaf

FILE ALLOCATION TABLE

The File Allocation Table (F.A.T.) starts on track 0, sector 2 and may be the most important table on the disk. F.A.T. is used to keep track of the sector linkage for all data sectors. It is also used for files listed in Folders (sub-directories, see Attributes). The F.A.T. is five sectors long and is valuable enough to have a duplicate table on the same disk. The location of the second F.A.T. is currently track 0, sector 7 but that is subject to change at any time.

The best way to think of F.A.T. is like a puzzle. Each entry of the F.A.T. is 12 bits long (not bytes) and the values range from $000 to $FFF (see Figure 3). Byte 0 of F.A.T. tells what density the disk is formatted in ($F7 is normal for a single sided disk) and bytes 1 and 2 will be $FF as they are not used. The rest of the table is used as follows. The F.A.T. from Figure 3 will be used for the examples but before beginning it should be pointed out that 12 bits per entry means that 2 entries equal 3 Hex characters (bytes). We will start with bytes 03, 04 and 50 for our first 2 entries (see fig. 3). Byte 03 will be bits 0 to 7 for the first 12 bit entry, and bits 0 to 3 of byte 04 will be bits 8 to 11 of the first entry. As you can see in the first example, the number is $FFF. In F.A.T., if an entry contains $FF8 to $FFF it means that the cluster is the last cluster of the file (EOF). Also, if an entry contains $FF0 to $FF7 it means the cluster is not usable for some reason. Now, if you will return to byte 04 you will remember that we have only used 4 bits (0 to 3). Bits 4 to 7 of byte 04 will become bits 0 to 3 of the second entry and byte 05 will be used as bits 4 to 11. This entry indicates that cluster 4 will be the next cluster for this file and it continues in that manner for the rest of the table.

FINDING TRACKS AND SECTORS

Now you know what cluster to look at, but maybe you want to know which track and sector that is. The quickest way I have come across is one of the following formulas.

a) To convert from Cluster to Track and Sector:

$$(((\text{cluster} + 9) * 2) - 1) / 9 = \text{track}$$
$$(((\text{cluster} + 9) * 2) - (\text{track} * 9) = \text{sector}$$

b) To convert from Track and Sector to Cluster:

$$(((\text{track} * 9) + \text{sector}) - 17) / 2 = \text{cluster}$$

A brief explanation.

Data sectors start at track 2, sector 1. That means 18 sectors (or 9 clusters) have to be accounted for in the formula. Also there are 2 sectors per cluster so you must multiply by 2 at some point. Here is all there is to it. What cluster is track 22, sector 2?

$$(((22 * 9) + 3) - 17) / 2 = 92$$

If there had been a remainder, it would have been the second sector in the cluster. That's all there is to it, but just so you can practise a little. a chart is included with some of the clusters marked with the track and sector (Figure 4).

This article appeared in an American newsletter A.S.T.U.N of 6157 South 700 West, Murray, Utah 84123. The author is not credited.

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	F7	FF	FF	FF	4F	00	05	60	00	07	80	00	09	A0	00	0B
10	C0	00	0D	E0	00	0D	00	01	11	F0	FF	13	40	01	15	60
20	01	17	F0	FF	19	A0	01	1B	C0	01	1D	E0	01	1F	00	02
30	21	20	02	23	40	02	25	60	02	27	80	02	29	A0	02	2B

Figure 3 F.A.T.

```
Boot   :
Sector :< ---------- F.A.T. #1 ---------->:<------ F.A.T #2 --
  0.1   0.2   0.3   0.4   0.5   0.6   0.7   0.8   0.9
------------------------------------------------------------
----------->:<--------- Disk Directory (7 sectors) ------>:
  1.1   1.2   1.3   1.4   1.5   1.6   1.7   1.8   1.9
------------------------------------------------------------
  CLU #2      CLU #3      CLU #4      CLU #5      CLU
  2.1   2.2   2.3   2.4   2.5   2.6   2.7   2.8   2.9
------------------------------------------------------------
  #6    CLU #7      CLU #8      CLU #9      CLU #10
  3.1   3.2   3.3   3.4   3.5   3.6   3.7   3.8   3.9

      )              )              \

  CLU #334    CLU #335    CLU #336    CLU #337    CLU
  76.1  76.2  76.3  76.4  76.5  76.6  76.7  76.8  76.9
------------------------------------------------------------
  #338  CLU #339    CLU #340    CLU #341    CLU #342
  77.1  77.2  77.3  77.4  77.5  77.6  77.7  77.8  77.9
------------------------------------------------------------
  CLU #343    CLU #344    CLU #345    CLU #346    CLU
  78.1  78.2  78.3  78.4  78.5  78.6  78.7  78.8  78.9
------------------------------------------------------------
  #347  CLU #348    CLU #349    CLU #350    CLU #351
  79.1  79.2  79.3  79.4  79.5  79.6  79.7  79.8  79.9
```

Figure 4 Tracks and Sectors = Clusters

```
10    clearw 2:color 1,1,1
20    for x=0 to 615 step 5
30    linef x,0,0,344
40    next:for y=0 to 344 step 4
50    linef 0,344,615,y
60    next
70    for x=0 to 615 step 5
80    linef x,0,615,344
90    next
100   for y=0 to 344 step 4
110   linef 615,344,0,y
120   next
130   color 1,1,0:for x=0 to 615
140   linef x,0,307,172:next:linef 0,0,615,344
150   linef 0,344,615,0:goto 150
```

TUNNEL

```
5     fullw 2:clearw 2
10    read x,y,x1,y1
15    if x=0 then goto 50
20    linef x,y,x1,y1
30    goto  10
50    read x,y,r,xo,yo
55    if x=0 then 100
60    circle x,y,r,xo,yo
70    goto 50
100   color 1,1,1
110   fill 300,165:fill 300,115
120   fill 251,165:fill 300,215
130   fill 347,165:fill 100,172
140   for i=1 to 5000:next:end
1000  data 290,155,290,210,290,175,345,175
1010  data 310,175,310,120,310,155,255,155
1020  data 290,210,345,210,345,175,345,120
1030  data 255,155,255,210,310,120,255,120
1040  data 0,0,0,0
1050  data 300,120,10,0,1800,255,165,10,900,2700
1060  data 300,210,10,1800,3600,345,165,10,2700,900
1070  data 300,120,45,0,1800,255,165,45,900,2700
1080  data 300,210,45,1800,3600,345,165,45,2700,900
1090  data 0,0,0,0,0
```

OPTIC

```
5     n=1
10    rem spiral_1
20    clearw 2
30    x=310:y=172:r=20:color 1,n,n,1,1
40    circle x,y,r,1800,3600:r =r+5
50    circle x,y,r,1800,3600
60    x=x-10
70    circle x,y,r,0,1800:r=r+5
80    circle x,y,r,0,1800:x=x+10
90    if r>175 then 150
100   goto 40
150   linef 290,172,285,172
160   fill 288,173
165   if n=1 then n=0 else n=1
170   color 1,n,n,1,1
180   goto 30
```

SPIRAL2

```
10    clearw 2:fullw 2:color 1,1,1,1,1:fill 1,1
20    randomize 0:poke systab+24,1
30    for i=1 to 200
40    color 1,1,0:x=rnd:y=rnd:x1=rnd
50    y1=rnd:x2=rnd:y2=rnd:x3=rnd:y3=rnd
60    x1=x1*615:y1=y1*344:y=y*344:x=x*615
70    y2=y2*344:x2=x2*615:x3=x3*615:y3=y3*344
80    linef x,y,x1,y1:linef x1,y1,x2,y2:linef x2,y2,x3,y3
90    linef x,y,x2,x3:linef x,y,x3,y3:linef x1,y1,x3,y3
100   linef x3,y3,x,y:color 1,1,1,1,1
110   linef x,y,x1,y1:linef x1,y1,x2,y2:linef x2,y2,x3,y3
120   linef x,y,x2,y2:linef x,y,x3,y3:linef x1,y1,x3,y3
130   linef x3,y3,x,y:color 1,1,0:next
140   poke systab+24,0:goto 140
150   xx=(rnd(0))*615:randomize 0:yy=(rnd(0))*344:randomize 0
```

RNDSHAPE

```
10    clearw 2: fullw 2
20    for x=0 to 615 step 3
30    linef x ,0,0,344
40    next:for y=0 to 344 step 3
50    linef 0,344,615,y
60    next
70    for x=0 to 615 step 3
80    linef x,0,615,344
90    next
100   for y=0 to 344 step 3
110   linef 615,344,0,y
120   next
130   goto 130
```

PATTERN

Get out that BASIC disk and spend a few minutes typing in these simple demos, you'll find it well worth it, and, who knows, you might be spurred in to writing some really spectacular demos yourself! How about converting some of those old 8-bit demos? We'd like to see whatever you can do. Get cracking!

These listings were originally published by Adelaide A.C.E. in their newsletter Feedback. The author is not credited.

SUPERTEC ATARI USER OFFERS

SUPERTEC software for the ATARI ST

Title	Type	Inc VAT
Deadline	Entertainment	£22.95
The Pawn	Entertainment	£24.95
Red Alert	Entertainment	£24.95
Winter Games	Entertainment	£24.95
Golf	Entertainment	£29.95
Bridge	Entertainment	£29.95
Time Bandit	Entertainment	£29.95
Sundog	Entertainment	£29.95
Major Motion	Entertainment	£19.95
Deep Space	Entertainment	£34.95
Star Glider	Entertainment	£24.95
St Karate	Entertainment	£19.95
Temple of Apshai Trilogy	Entertainment	£24.95
Enchanter	Entertainment	£39.95
Cut Throats	Entertainment	£39.95
Bally Hoo	Entertainment	£39.95
Essex	Entertainment	£44.95
Brimstone	Entertainment	£44.95
A Mind Forever Voyaging	Entertainment	£44.95
Mind Shadow	Entertainment	£49.95
Borrowed Time	Entertainment	£49.95
Powerpack Address Book	Database	£19.95
Powerpack Database 35	Database	£29.95
Kdata	Database	£49.95
Habaview	Database	£74.95

Title	Type	Inc VAT
Zoomracks	Database	£79.95
T-R-I-M	Database	£89.95
H & D Base	Database	£99.95
Laserbase ST	Database	£99.95
dBman	Database	£149.00
Habadex	Database	£49.95
Print Master Gallery 1	Print Utility	£29.95
Print Master	Print Utility	£39.95
Music Studio	Music	£29.95
Paintworks	Graphics	£34.95
Degas	Graphics	£39.95
Easy Draw	Graphics	£149.95
Colourspace	Graphics	£19.95
Cashlink Accounts	Accounts	£295.00
Habawriter	Word Processor	£59.00
KWord	Word Processor	£49.95
Boffin	Word Processor	£113.85
Hippopixel	Font Editor	£39.95
Habamerge	Mail Merge	£39.95
Kseka	Assembler	£49.95
Kspread	Spreadsheet	£49.95
PC Intercom	Comms	£129.95
K Graph	Bus. Graphics	£39.95
K Comm	Comms	£49.95
V.I.P. Lite	Spreadsheet	£99.95
Calculator	Desk Accessory	£12.95
Programmers Calculator	Desk Accessory	£15.95
Cornerman	Desk Accessory	£29.95
Calendar	Desk Accessory	£19.95



SUPERTEC LTD.
CORNWALLIS HOUSE,
HOWARD CHASE,
BASILDON, ESSEX, SS14 3BB Tel: 0268 282308

Please send me the items marked. I enclose Cheque/Postal order for the full amount, including VAT £..........

OR Debit my Access Card
Number:..........

Ref	Qty	Price (ea) Incl VAT
01		£1026.71
02		£184.00 (per station)
03		£113.85
04		£7.50 (Pkt. 10)
05		£2.50 or £1.95
06		£125.00
07		£339.25
08		£159.00
09		£269.00

Name ________
Address ________
________ Postcode: ________
Signature: ________

PLEASE ALLOW 28 DAYS FOR DELIVERY

SOFTWORKS BASIC
Review by Stephen Eitelman

Softworks Basic is a new Basic compiler for the ST. A complier translates an entire program into machine language before executing it, whereas an interpreter such as ST BASIC translates each command into machine language and then executes it before going on to the next command. Routines with much repetition such as lengthy FOR-NEXT loops can be speeded up considerably through the use of a compiler, or they should be if the compiler is well written.

The manual for Softworks Basic is mercifully short, 80 pages of 6" by 6" paper written on both sides. For quick reference it has a complete table of contents and is well indexed. The compiler proves easy to use and comes complete on one single-sided disk. Compilation is fast and consists of two steps, compilation (generation of machine code) and linking to the runtime module (coupling library functions, relocating the finished code etc.). After the runtime module is linked, the program automatically executes.

An editor is supplied with which most users will be familiar, it is 1st Word, version 1.06! It is automatically coupled to any program that ends with a .BAS extension. When such a program is selected from the desktop, 1st Word is loaded first and then the selected program is read in. This feature only functions properly if the desk accessories are not modified.

DIALECT

This particular version of Basic has a very powerful set of commands. It includes a wide range of flexible string manipulation commands and a surprisingly complete set of math routines, although there are no matrix or complex math commands (such as square root of -1). Softworks Basic also includes what are called Mapped variables. These can be subsets of other variables, such as would be found in name, address, social security number etc. This allows relatively complicated data structures to be handled either as a single entity or by their component parts. Additional features permit calling machine language routines with the XCALL command, chaining files together, and VDI/AES calls. VDI and AES calls permit the graphics and sound capabilities of the ST to be utilised, although some substantial effort must be expended to learn the use of the functions. Output formatting is very flexible with the PRINT USING statement and about 10 associated control characters. Programs can be written with or without line numbers. There is considerable file manipulation capability, including treating the various ports on the ST as if they were sequential files. Error trappping is provided so that errors can be made to cause the program to branch to an error message without crashing.

SPEED

Now for some of the bad news. Once again, we have a compiler that is slow, slow, slow for math applications! It runs such programs four times slower than the ST BASIC interpreter, which I find just plain unacceptable (and incomprehensible!). The table tells it all. The Philon Compiler is included for comparison.

Execution times in Minutes/seconds

Test	A	B	C	D	E
ST BASIC	0:51	1:09	5:04	1:45	0:26
Softworks Basic	3:56	0:24	0:69	0:37	0:09
Philon Basic	1:39	2:04	2:25	0:36	0:05

A – 1< = I< = 10000, COS(I) ^ 2
B – Generate 1000 random strings
C – Sort 1000 strings
D – Print 1000 sorted strings
E – Examine 1 – 2047 for prime numbers using sieve (one iteration)

The good news is that Softworks Basic handles string manipulations very efficiently – between three and four times faster than ST BASIC (the interpreter) and two to five times faster than the Philon Fast/Basic-M compiler.

There also appears to be a lesson to be learned from the Sieve of Eratosthenes (called the Sieve from here on). The Sieve consists of nested FOR-NEXT loops, clever selection of start and end points, step size and a lot of simple addition to examine a list of consecutive numbers for prime numbers. These results suggest that complicated functions are a lot harder to write efficient compiler code for than simple ones. On the other hand, most real-world math modelling requires more than just simple addition, so perhaps the Sieve is not all that representative of what is needed for a numercial benchmark.

DRAWBACKS

The following drawbacks were noted during the review:

The instruction manual lacks adequate examples and there is no discussion of the sample programs on the disk.

The runtime module does not allow machine executable code to be saved to disk. Instead, the runtime module is coupled to the object code and is automatically run every time before the program is executed. If the desk accessories are changed, the runtime module will not execute automatically, requiring a separate command to load it, then specify the program to be linked. This is time consuming and potentially confusing to a user of the program.

There is no interpreter, making debugging very difficult in a long program. It will compile only about 70 commands from ST BASIC (out of 166); there is no provision for clearing the screen, compiling basic graphics or compiling sound commands. However, graphics and sound can be accessed from the VDI and AES commands, but these require some considerable effort to master. Games written in ST BASIC will need a lot of modification to compile.

There are only eleven digits of numerical precision, instead of the more common 14-16 digits. Also, there is no true integer capability. Everything is done in floating point, slowing down programs that could be speeded up by integer declarations.

The order of execution of statements is independent of the line numbers. So if you decide to add a line 45 and it follows line 50 in the file, it will be executed in that order. A minor point perhaps, but irritating.

continued on page 45

CARTRIDGES

Matthew Jones explains what they are and reviews a system for making them

WHAT ARE CARTRIDGES?

The Atari ST computer is equipped with one of the best ranges of I/O connectors of any personal computer, including parallel, serial, MIDI and DMA ports. Independant companies have brought out software and hardware to enable you to make the best of each of these connectors with the exception of the cartridge port.

Eight-bit Atari owners will already be familiar with cartridges, a method of using programs on ROM (Read Only Memory) rather than loading them into RAM from disk or cassette. The 128K cartridge port on the ST is, however, both bigger and more flexible than the 8-bit machines 16k cartridge and can contain more than one program. On the 8-bit Atari, each cartridge would dominate the computer so that, when you had a Star-Raiders cartridge in, for instance, you could not also load a word processor from disk. On the ST, whilst the cartridge can take complete control in a similar manner, it may also be used in a manner similar to a disk drive (i.e. the program is only run when you choose to do so), or as a method for loading accessories.

So that's what a cartridge is used for, but what exactly is a cartridge? Well, it is quite simply a printed circuit board (PCB) with two or four ROM or EPROM chips, suitably programmed, with a case around it. An EPROM is an Erasable Programmable Read Only Memory, and it provides a re-usable ROM. ROMs are cheaper than EPROMs, but when you are developing a program you do not want to keep throwing away a chip costing five pounds every time you want to make a small change.

On one side of the cartridge is a connector which makes contact with a matching connector in the slot on the left side of your ST, and which connects the ROMs directly into the memory space of the 68000 processor. When the ST is booted (turned on) the operating system (O.S.) looks at this area of memory and tries to find a cartridge, taking appropriate action if one is found. Plugging in a cartridge and booting up will cause a new icon to appear on the desktop, very similar in operation to the disk icons, but with the identifier 'C'. Opening this shows you what programs you have on the cartridge. To run a program, just open it in the usual way. Note though that, unlike opening a file from disk, opening the cartridge program does not load it into RAM, it is run straight from the ROM and therefore it is exceedingly fast to 'load' and most of your RAM is available for data. Computer Concepts Fast ST BASIC is run by this method (I understand Computer Concepts used the Nexus EPROM development system). The program can be any of the usual types, ie. APP, TOS or TTP. If the program is an accessory, it can be run by selecting its name in the DESK menu (BackPack, a multi-purpose utility, also from Computer Concepts, uses this method).

Cartridges are obviously very fast to load and easy to use, so why are there so few about? The reason is partly that it is difficult to write a program to go into a cartridge, and partly that there has been no ST cartridge development system. Nexus has now removed the latter problem, and the rest of this article will review their development system.

NEXUS EPROM DEVELOPMENT SYSTEM

The Nexus EPROM Development System (hereafter called NEDS) is designed to provide a method of testing, simulating and programming EPROMs. Very cheap EPROM programmers that plug into the side of computers are available, so the question that must be asked is what can this system do that a cheaper system cannot? The answer lies in the test and simulate part of the description.

TESTING AND EMULATING

The NEDS has 64Kbytes of RAM on its 7 inch by 10 inch uncased PCB, as well as two Zero Insertion Force EPROM sockets, two 28 way simulation header sockets and the required logic chips. The RAM is used to hold the program and/or data that you want to be programmed onto the EPROMs (programming of 128K cartridges has to be done in two stages). The clever part of the NEDS is that this RAM can be made to simulate a ROM, either on the host system (the one into which the NEDS is plugged) or, via the 28 way headers, in an external system. By either of these methods, it is possible to test your program in (simulated) EPROM without going to the trouble and expense of 'blowing' an EPROM, and then having to erase it if it did not work. The contents of the NEDS RAM will survive a reset and, for longer term development, can survive without power for up to two weeks.

IN USE

To use the NEDS, you must first plug it into the cartridge port, and then turn the computer on. You then load EPROG.PRG from disk, and you are presented with a GEM dialog which contains a list of all the different EPROM types and programming modes available. NEDS will program three different types of EPROM (2764, 27128 & 27256) in one of two ways, and they can be in 8-bit (for processors like the 6502) or 16 bit wide modes (for the ST). After making this initial selection, a window is opened in which a memory dump of either the EPROMs or the simulation RAM can be obtained, and five icons appear on the left hand side. These icons represent the EPROMs in the ZIF sockets; the simulation RAM (depicted as an icon of the four-legged wooly variety of RAM); a floppy disk; a screen; and an AUX (serial) port. These are used by dragging one on top of another. For instance, to program your EPROMs you would drag the disk over the RAM, select a file (which can be of INTEL hex, MOTOROLA hex, Hex space or binary type, a demo binary file is included on the disk) and then when the file is loaded, drag the RAM over the EPROM to make the permanent copy. The EPROMs can then be put in a cartridge board (which Nexus can supply). To see the contents of the EPROM, you drag the EPROM icon over the screen icon. The memory can be scrolled for viewing using the windows scroller bar.

As well as the icons, NEDS has a full complement of drop down menus. These allow you to: change the EPROM type; check the EPROM is blank, or programmed correctly; locate a byte (or word) in RAM or EPROM; perform a checksum of EPROM or RAM; fill or clear RAM; move RAM block; edit RAM; display the memory either as bytes, word or longwords; and set the simulation mode. Most of the functions allow you to specify a range to operate within, and all use a 'thermometer' to indicate progress.

In general you are able to do everything that you are likely to want to do to program EPROMs and simulate them. The RAM editor is very simple, and is only adequate for changing a few bytes, not extensive changes, there is no disassembler or assembler provided.

The major software deficiency at the moment is an automatic mechanism for converting your compiled language code into a form suitable for use in an EPROM. A special header is needed in the EPROM for the O.S. to recognise it and be able to use it, as well as initialisation code. Unless you are familiar with 68000 machine code, and with the initialisation method of your compiler, you may have trouble writing code for this part of the process. Nexus ask that any such software you write for the public domain be sent to them for inclusion in their package. I hope that people do this, in order to encourage less experienced users to use the system. Nexus are also considering releasing (at extra cost) compiled libraries of their simulation RAM read/write routines used in the programmer, to be used by the very advanced programmer who wishes to write his own utilities to work with the Nexus board.

THE MANUAL

The manual is supplied on disk as a file. The single sheet of instructions that comes in the package instructs you to select one of three programs depending on whether you want to have a copy on your parallel or serial printer, or on the screen. The manual assumes that you are familiar with EPROMs and EPROM programming. It gives no information about what is required from a cartridge to make the O.S recognise it, only a book reference is given (I also recommend Atari's 'Hitchhikers guide to the BIOS'). I hope that Nexus provide a section with full detail about this in future, as there is only a limited amount of information available on this subject, and it would encourage sales if you knew that you would get more detail with the system. The manual does however cover operation of the NEDS hardware and software quite adequately.

CONCLUSION

The Nexus EPROM Development System is a very capable EPROM programmer and simulator. I would certainly recommend it as such. The word development in its title is a bit misleading as it is not complete, lacking the software to make a cartridge header version from a standard linked version. A few utilities, or a new startup source for a compiler to provide this function are needed. The system is not for the beginner, but is very reasonably priced when considered for use by a software developer.

The Nexus EPROM Development System costs £201.25, socketed ST cartridge boards cost £14.75 and 28 way DIL plug EPROM simulation leads cost £11.50 (all prices include P&P and VAT) ●

SOFTWORKS BASIC from page 42

Error messages that occur during either compiling or linking (runtime module execution) are flashed on to the screen for only a fraction of a second and then the program defaults back to TOS – not enough time to read the error message. At first this is just an irritation but eventually it becomes a real problem. I found myself compiling a program numerous times just to try to read the error message printed by the compiler. There are compiler directives that permit the generation of an error listing to disk, but for simple programs, this is more trouble than it is worth.
Finally, as discussed above, the compiler results in very slow code for math intensive applications. Speeding up math modelling programs is one of the major motivations for buying a compiler.

CONCLUSIONS

Softworks Basic has the potential to be a very excellent compiler – a comprehensive vocabulary, fast compilation time and ease of use. The various drawbacks, however, make the product in its present form poorly suited to many of the the major reasons for buying a compiler. There is still no GOOD Basic compiler for the ST that I have seen – that is, one that is at least up to the standards established by the IBM PC compiler.

This review first appeared in Current Notes, 122 N. Johnson Road, Sterling, VA 22170-9998, U.S.A. Softworks Basic is priced £79 in this country and should be available from your dealer via SDL or other distributors. ●

1ST Choice for the ATARI ST

From the Authors of 1ST WORD™ GST That little bit extra

1st Mail £29.95

1st Mail™ from GST is a mail merge program which is compatible with all versions of 1st Word™. It will allow you to combine your word processor with all of the popular database programs currently available on the Atari ST. With 1st Mail you can produce multiple copies of any 1st Word document. Its only limit will be your imagination! Written by GST.

C Compiler £59.95

This C Compiler offers unbeatable value for money for GEM software development. The package includes an editor, subset C compiler, assembler, linker and full GEM libraries. Written by GST.

Macro Assembler £39.95

This Macro Assembler is the finest M68000 assembler available on any PC. The package consists of an editor, macro assembler, linker and a library of structured macros. Written by GST.

Now improved with a comprehensive demonstration program.

Fractal Generator £19.95

Fractal Generator explores the infinitely complex and beautiful fractal geometry of the Mandelbrot Set. Full GSTC and assembler source code is included for the enthusiast. Written by GST.

We are proud to be associated with Antic Publishing, well known in the U.S. for its high quality and innovative range of software for the Atari.

CAD – 3D £49.95

Design 3D solid or wire frame objects with your GEM mouse. Multiple light sources and views. Includes animator. (DEGAS/Neo compatible). Written by: Tom Hudson. Licensed by Antic Publishing Inc.

Flash £39.95

Complete GEM-based telecommunications. Programmable, configurable, with built-in word processor, VT-100 and CIS Vidtex graphics. Written by: Joe Chiazzese and Alan Page. Licensed by Antic Publishing Inc.

Maps and Legends – The Cartographer £29.95

Generate Maps and Satellite views of the Earth. Select from different projections and map types. Fully GEM based. Licensed by Antic Publishing Inc.

Star Struck – The Astrologer £24.95

Create detailed astrological charts using nine different house systems. GEM interface makes it easy. Written by: Harvey Koons. Licensed by Antic Publishing Inc.

C.O.L.R. Object Editor £24.95

Graphic design and software sprite editor for programmers using the 16-colour mode. Written by: The Rugby Circle. Licensed by Antic Publishing Inc.

Red Alert £19.95

Defend against MIRVs, ICBMs and sub-launched missiles. An unnerving SDI Construction Set. Written by: Dan Matejka and Stanley Crane. Licensed by Antic Publishing Inc.





Electric Software Limited, Unit 8, Cromwell Business Centre, New Road, St Ives, Cambs PE17 4BG, England.
Tel: (0480) 66433 Telex: 81113 PM PROF G. Telefax: (0954) 80318.

THUNDER
Batteries Included/ Ariolasoft
£39.95

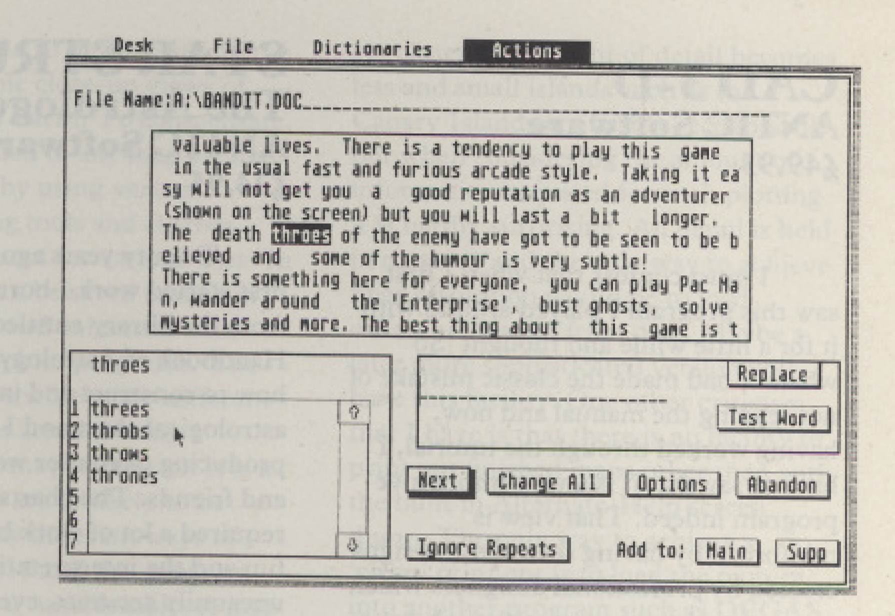
There are a few companies, and only a few, who you just know you can trust and Atari 8-bit owners will confirm that Batteries Included is one of them. All of their previous Atari products have been of the highest calibre and their first offering for the ST – DEGAS – has set the standard for other graphics programs. What then of their first piece of 'productivity' software? Is it up to expectations? You bet. Batteries Included have once again set the standard to which all other software producers should aspire.

Thunder is a top quality professional spelling checker that can work as a desk accessory with GEM based word processors or as a stand alone program with virtually any other word processor on the ST. It gives you access to a dictionary of 50,000 words with the option of adding a further 2000 words. Although you cannot delete words from the main dictionary, there is a limited user definable supplementary dictionary and several sets of supplementary dictionaries can be built up for specific applications. You can choose from an option screen whether supplementary dictionaries are loaded automatically when Thunder is booted or load them yourself as needed.

As a Desk Accessory, Thunder will perform 'real-time' checking which means that as you type a word it is checked and a bell sounded if it is incorrect. You then have the opportunity to move the mouse to the menu bar and correct the spelling from the alternatives suggested or manually. Personally I cannot see the benefit of such instant checking, except as a teaching aid, as it tends to slow down composition of a document to an unacceptable pace especially if you are not a trained typist. I prefer to get the text in as fast as possible and then check afterwards as you can then use global replacement and the like to speed things up. One feature which works well is what they call the 'Learn dictionary' which allows you to teach Thunder your most common mistakes and have them automatically corrected. If, for instance you habitually type Atrai instead of Atari you can teach Thunder the pair association and forget it. Likewise the program has the ability to expand abbreviations making it possible to use a form of shorthand. You could, for example use MBC for Manchester Brewery Corporation to save you typing it in full each time. The only thing to be careful of is that you cannot use accepted words as abbreviations otherwise you could find some rather peculiar documents!

I feel Thunder really comes into its own as a stand alone spelling checker. Almost any text file can be checked as non ASCII characters are ignored. The document is read from disk into a window on-screen which allows you to view the word in context. Each time an unrecognised word is found, it is highlighted and a bell sounded. Suggested alternatives are given in another window from which a substitution can be made with a click of the mouse. You may alternatively ignore the word, ignore repeats of the same word, change all occurrences of the word or add a word to the main or supplementary dictionaries. All with just the click of the mouse and with utmost ease. It really is a joy to use.

Most of the time you will be able to correct spellings from the suggested alternatives, especially once you have



used it a few times and expanded the dictionary to suit your own idiosyncrasies. One of the things that sets Thunder apart is that the vast majority of the suggested alternatives are intelligent, certainly more so than any other spelling checker I have seen. It even suggests two words to replace one, in case you have omitted a space! It also recognises whether the word being tested is in upper or lower case or both and offers alternatives accordingly. There is no need to say much more about how Thunder works, it is incredibly easy to use, fast and efficient.

Another part of the program that can be called to check a document is statistical analysis with gives you character and word count as well as sentence and paragraph analysis although the latter are not accurate on all word processors as they depend on reading ASCII carriage returns. Some words processors have their own peculiar line endings. The program will also tell you the 'education level' of the document, based on established principles, and, whilst not strictly accurate it can be useful to know how complex your document is. It can also be fun, for instance, did you realise that some of the reviews of languages that have appeared in PAGE 6 require 16 years of schooling!

Before sending you away with a recommendation to buy, I must go through the nitpicking. Firstly, believe it or not, there are spelling mistakes in the main dictionary! Fortunately they are not the sort which will affect your work, except by the remotest coincidence, and they only appear as suggested spellings. Things like cross-referengcer and wifreframe?? The most frustrating thing however is coping with American spelling conventions. Although Batteries Included claim that the dictionary used is unique in that it can recognise both American and English spellings it clearly can't. All words that we spell with ise such as recognise are thrown out because the Americans spell them with a z. You do need to add a lot of words to the dictionary when you first use it. Finally, something of little direct importance but which intrigues me. Why did they not use Thunder on the manual! It is riddled with spelling mistakes. That's what happens when you use a program as good as this, you become ultra-critical!

Criticisms above aside, Thunder really is a top class professional program. If you write articles for money it is an essential tool. For anyone else who uses a word processor it will still be one of your most useful buys that will educate you and enhance the quality of everything you produce. Thank you Batteries Included, my respect for your products continues.

CAD 3-D
ANTIC Software
£49.95

I must confess that when I first saw this program I played around with it for a little while and thought 'So what?' I had made the classic mistake of not reading the manual and now, having worked through the tutorial, I have to say that it is a very impressive program indeed. That view is reinforced by having seen some designs created by professional designers which prove that the program, although not a full CAD tool, can be used seriously as well as for fun.

CAD 3-D is basically a program which allows you to create three-dimensional objects from pre-defined shapes or freehand which you can then scale, size or rotate as you wish. The screen is divided into four windows which allow you to view an object from different directions and immediately see the effects of any changes. Objects can be easily duplicated within windows by selecting and dragging the desired object to a new position. Complex objects can be built up by duplicating and then joining several objects into one. Just how complex objects may become is demonstrated by an incredible model of Stonehenge which is included. Imagine being able to tilt Stonehenge in all different directions and alter the size of various stones! You may even be able to improve on that ancient design – assuming you know what it was designed for in the first place!

Objects are either selected from a number of pre-drawn shapes such as cubes and spheres which can then be altered or are defined in a two-dimensional plane and then extruded or spun into three-dimensional objects. The process is remarkably easy and fascinating to watch as all the necessary calculations are performed by the computer. It is by no means instant but, considering the amount of calculation involved, very fast. Models which you create can be viewed in several different ways. Wireframe shows all of the plotted points of the object but you may select hidden line, solid or outline and view all lines or edges only. Added texture is created, in solid mode, by the use of three different light sources which can be directed from several angles and at different intensities. The lighting really comes into its own when the object is viewed in colour.

Some other points to consider? Objects created can of course be saved to disk or printed out, although there are unfortunately no printer drivers so that only the standard Alternate-Help screen dump is available. You can however save in DEGAS or NEO formats and so use other utilities on finished objects. Animation is possible with a separate program supplied although this is fairly limited and quite slow. If you are interested in animation though, ANTIC will shortly have a separate program available which can accept CAD 3-D images and animate them at blinding speed. Keyboard alternatives are available for all the commands in the program for those who prefer to work in that way.

There are many other aspects and refinements which I have not been able to cover. A disadvantage in reviewing a product such as this is that I am not a professional draughtsman and will therefore inevitably overlook its strengths and weaknesses in the professional field. I am sure however that, considering its cost against established CAD programs, most professionals would find it useful and worthwhile, if only to sketch out ideas at home. The range is open to the designers imagination. It is certainly possible to design something like a vehicle chassis as I have seen such a demonstration. For non-professional users it will open up new areas of creativity and give many hours of interest in exploring the world of three-dimensional objects.

STAR STRUCK
The Astrologer
ANTIC Software
£24.95

Twenty years ago or so, when I first started work I borrowed a book from the library entitled The Modern Handbook of Astrology. It told you how to construct and interpret an astrological chart and I duly set about producing charts for workmates, family and friends. The charts themselves required a lot of work but were great fun and the interpretations were uncannily accurate, even for people I did not know. I had great fun for many months but eventually other interests came along and all my charts lay forgotten. Still kept but no longer used and I seldom thought about them again until this program came along.

Star Struck is a program to produce astrological charts for horoscope purposes and takes all of the hard work out of the process. You must still interpret the charts yourself but interpretation is a very personal thing, that is only to be expected.

In case you don't know, two things are required to cast a horoscope – the time and place of birth. The place can be entered in Star Struck by using the Longitudinal and Latitudinal coordinates of the birthplace taken from an atlas, which is by far the most accurate way , or by selecting a map and using the mouse. Two maps are available, the U.S.A or the whole world. Simply use the mouse to point at the approximate place and the coordinates will be shown and can be input automatically. Time is selected from a comprehensive GEM based menu with options for different time zones and time variations such as Summer Time. Once these two variables have been entered just choose you chart type and it is drawn immediately. What used to take hours of research now takes only seconds!

Nine different types of chart are available but, although the program does include some explanatory notes you will need to buy or borrow a book on astrology to understand the differences. Likewise, some brief notes on interpretation are included but don't try and interpret a chart from these, they are far too general. There is a lot more to casting a horoscope than you might imagine. Other options allow the aspects, planets and zodiac to be shown in greater detail on the screen.

The manual is quite extensive but comes as a text file on the disk, you have to print it out yourself. This should however prove no problem as the prime purpose of the program is to provide printed charts and without a printer you will find its use limited.

Seeing those charts again brought back all the old memories of evenings spent working out those horoscopes many years ago. It looks like I may be going down the library again to see if they still have that book. If you are are already interested in Astrology, this program will be a godsend. If not, nip down the library and borrow a good text book, you could have hours of fun without all the hard work of drawing your own charts.

MAPS & LEGENDS
Antic Software

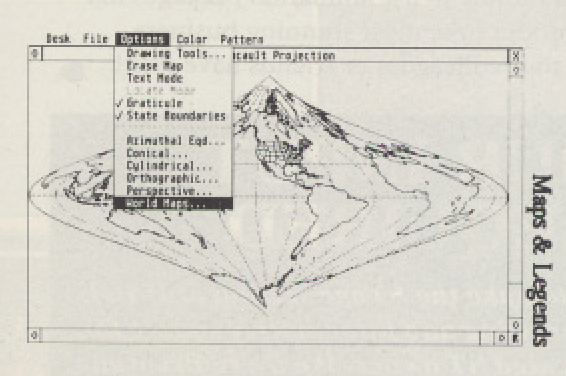
Maps and Legends can be used for just plain fun or as a serious educational or business tool, enabling you to produce small scale maps of any area of the Earth. Before we begin, however, I must clear up a popular misconception concerning the Legends part of the title for those who might be disappointed to find that the program does not contain any heroic stories of myth and past adventure. The word legend in this context applies to detail on a map such as you would find representing roads and rivers etc. In speaking to several people I was surprised to find that this was not generally known. Obviously one of those things, learned from Boy Scout days that you assume everybody knows until you ask!

As far as the program goes, the Legends part appears to consist only of the State boundaries of the U.S.A. which is something of a disappointment but is understandable when you consider the enormous amount of other detail that has had to be packed into the program to enable close-up views of any land area on Earth. To compensate, detail can be added to any map created by the program by using various freehand drawing tools and custom maps can be created for various uses. In addition maps can be saved to disk in DEGAS format and enhanced with that or other graphics programs. The built in features enable many different world maps to be created using a number of different projections. It is a sure bet that you are unlikely to be aware of the many different ways of mapping the world and this program will enlighten you considerably. A map can be drawn viewed from any imaginary point above the Earth so that it can be centred on your home town or at any point on land or sea. Once the chosen centre in latitude and longitude is established the map can be drawn from any point above the surface from tens to tens of thousand miles or kilometres. Viewed from a distance of 10,000 miles the whole of the Earth's surface is seen whilst from the same co-ordinates you can zoom in to view just a portion of coastline. Sadly, as you get closer the amount of detail becomes less and small islands such as the Canary Islands are hardly recognisable but when considering the amount of information required for such plotting it is hardly surprising. All detail is held in memory and the only way to achieve finer resolution would be to load different areas in from disk. Maybe a later more sophisticated version will have this facility. One other criticism that I have is that there is no facility to print out finished maps other than with the built in Alternate-Help screen dump. The only way to achieve a 'clean' print out is to load the picture into another program such as DEGAS.

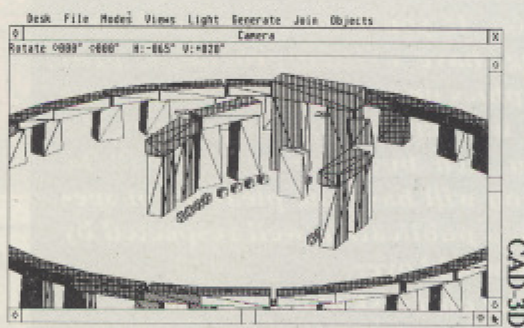
Don't let these minor criticisms detract, however, from the overall use or enjoyment of Maps and Legends. As an entertainment it will give you hours and hours of enjoyment exploring different aspects of the world but it can also be used as a tool in presentations, projects and school work. Above all it allows you to be creative and, by using its built in co-ordinates, you can design maps of beauty and variety. Maps and Legends runs in both monochrome and colour.

FOUR FROM ANTIC

ANTIC Magazine has a good reputation in the Atari world. What about their new ST software?



Maps & Legends



CAD-3D

RED ALERT
Antic Software
1 Player

Red Alert is a combination game of arcade style action and strategy involving a theme that seems to be one of America's favourite phobias, nuclear attack from the dreaded Commies.

The initial scenario is an outline map of North America which you must defend for as long as possible against missile attack from the East, either across the Atlantic or over the North Pole. To add further interest the Ruskies have managed to slip the occasional submarine into the Pacific so you need to watch your back. At the beginning of each game you are given free range to deploy laser bases and silos for ground to air missiles as well as cities to defend. This is where the strategy comes in, in building the best defence to protect your cities from destruction for the longest possible time. Laser bases are computer controlled automatic weapons and if cleverly placed will earn you high scores without intervention on your part. Any missiles that do get through must be destroyed by using the mouse to launch ground to air missiles. You also have a Space Cannon which is satellite mounted to be used as appropriate. At the beginning of the game, at least on level 1, you can relax while your laser bases, if properly deployed, look after incoming missiles but as time progresses these missiles come faster and more thickly. There are 3 levels in all requiring more action and quick thinking on your part.

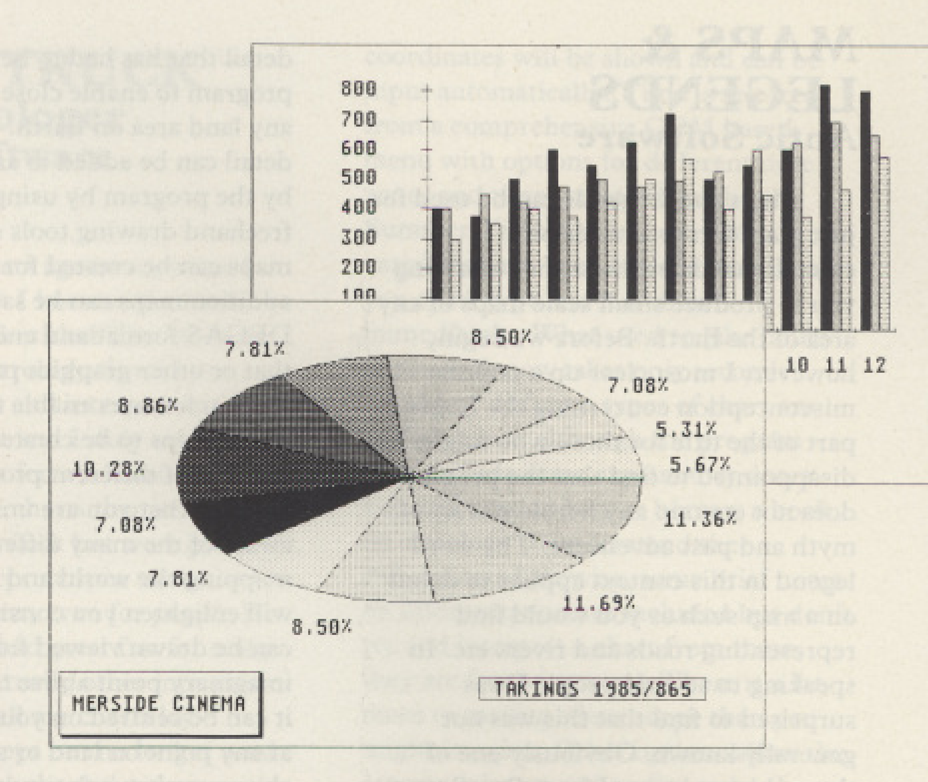
Generally a game does not last long, at least until you become an expert, but there is always a new high score to strive for as each successive high score for each level is saved to disk. Once you become expert in defending North America you can redefine the map to show Europe with the missiles coming from – guess where? Yes, it's those Commies again. Europe seems to be harder to defend as it is more congested and there is a danger of blowing up your own bases if they are sited too closely together.

I have to say that Red Alert is not a particularly spine tingling game and would probably appeal more to the less experienced game players. The main objective is to simply build a high score by lasting as long as possible before annihilation. It doesn't seem that you can actually beat the Russians, maybe there's a message there somewhere. ●

K-GRAPH

Kuma

£39.95



K-Graph is the latest addition to the K series of business applications for the ST and can be used on its own or in conjunction with K-Spread to produce graphs of many different sorts and styles. Whilst K-Spread itself does not match the power of VIP, K-Graph stands comparison much better. Indeed, in its range and ease of use it surpasses the graphing capabilities of that package.

As a stand alone package, data is entered and saved as a series of data sets using GEM to add or edit various items of data. Each set can be named and saved to disk for future use. Really that is all there is to creating the data for your graphs, it couldn't be simpler.

Displaying a graph involves load the appropriate data set or sets into memory for use as required later. Up to 32 data sets can reside in memory at any one time and up to 20 sets can be displayed on one graph. There is a wide range of graph types – Line, Vertical Bar, Horizontal Bar, Stacked Bar, 3D Bar, Pie and Overlaid Bar. The manual also mentions Scatter Graphs but this does not appear on the drop down menu. To display a graph you simply choose the type and then click on a Menu option called Display Set. This allows you to choose which set will be shown on the graph. A further option is then displayed giving you the choice of shading or colour used for that data. The graph itself is then instantly shown. Further data sets can be added to a graph at any time by selecting Display Set again and choosing the appropriate data set. Changing the style of graph is easy, simply click on change and choose the appropriate type. It is drawn instantly. One disadvantage of changing graph types is that you are not given the opportunity to select the shading or colour which is used for display. To do this you must recreate the graph anew which, admittedly, takes only a few seconds for a single set of data but could prove cumbersome for more complex graphs. Another nuisance on changing is that you cannot return to a pie graph when you have selected another, you have to recreate. This seems to be a bug associated with the restriction that you cannot use multiple data sets on a pie graph.

Titles can be added to any graph as can a line of text, these appear in 3-D style 'stand out' boxes and can be positioned anywhere on the graph simply by moving them with the mouse. Indeed the whole graph can be moved in this way to give you more creative freedom. The text can be 'arrowed' to point at any particular part of a graph. X and Y axes can of course be labelled as you wish. These labels can be created at will but must be saved separately from the data sets which is a nuisance. The manual says that Data and Labels can be saved together but does not tell you how, at least I couldn't figure it out.

The patterns used for lines and fills can be edited and saved to disk giving a wide choice of presentation style. In addition the whole of a created graph can be saved to disk in DEGAS format for later enhancement with that or other packages. The Print option is excellent allowing a wide choice of paper size and giving the user the opportunity to select exactly the position that the graph appears on the paper. Certain control is possible over the size of the image. One drawback is that printing is only possible on an Epson compatible printer, a strange restriction since Kuma were the first to provide printer alternatives on a spreadsheet.

reviewed by Les Ellingham

There are several other options and refinements possible which can add to the finished style of graph you produce. Additionally data can be transferred from K-Spread but I was unable to test this as it only works with version 1.24 or higher of K-Spread.

Overall the program is excellent but does have some drawbacks. One is that, apart from dumping the screen in DEGAS format, you do not appear to be able to save a graph complete with labels, titles and text. A real nuisance if you have spent some time in getting things just right. The criticisms are really minor though and the program is a joy to use. It will add punch to any presentation you may require for your statistics and the ability to save in DEGAS format means that you will be able to use animation packages like Make It Move to produce the most stunning business presentations that your colleagues or friends have seen!

YOUR INPUT REQUIRED

We want to make the STage section of PAGE 6 the most interesting and informative source for the more dedicated ST owner. We therefore want to hear from you. If you have discovered anything interesting, have written programs, produced great graphics or can write articles please let us know. We will pay for any items used. We won't make you rich but your efforts will be rewarded and you will have the pleasure of seeing your work in a publication well respected by Atari owners the world over.

Put something on a disk and send it now!

K-RESOURCE
Kuma

reviewed by Matthew Jones.

If you have an ST, you will have noticed that many programs consist of two files, the .APP (or .PRG) file and the .RSC file which contains encoded dialogs, icons, and other GEM objects. I have in past issues reviewed several compilers each able to create the .APP application program file but, as I said in issue 21, this is only half the process of generating a GEM application.

A resource editing program is needed to generate the .RSC file. The trouble is that until now, the only resource editors have been the Digital Research (DRI) Resource Construction Set (RCS) which suffers from bugs and design problems often making it unusable, and the rather limited Megamax version. Both come with expensive (and perhaps unnecessary) C compilers. To solve the problem Kuma have released K-Resource, an advanced resource editor which is available on its own.

THE MANUAL

K-Resource is packed in an 8 inch square folder and comes with a 31 page manual. The manual is in three parts, an introduction, an example, and a (relatively) large reference section. Like many manuals, this one only sets out to tell you what K-Resource will do, and how to use it, it does not really aim to teach you all about resources, what they are, how they work, and how to program for them – if you want to know that sort of information, get a copy of the ANTIC professional GEM series (1 through 15). The example takes the user through a very simple resource creating session, with 12 accompanying screen dumps. It is a simple demo, and I thoroughly recommend that anyone new to resource editors should play with it for some time. The reference section is quite thorough and explains all of the programs operations.

THE EDITOR

K-Resource differs from the two aforementioned editors in its basic operation by not having a window with all of the objects on the desktop which you copy into the single resource window to use. The K-Resource desktop is used very much in the same way as the normal GEM desktop (you can copy and delete files, create and open folders), but has been enhanced so that you can copy a resource file icon from the window (the disk) onto the desktop (representing memory) by dragging. By dragging more than one, you can edit several resources at the same time (something unique to K-Resource). When editing a resource tree (tree is the term used to describe the whole of a GEM 'part', tree types are: forms (dialogs); menus; free strings; alerts; and free images) you generate a new object by selecting a menu item which brings up a dialog with suitable possible parts. Click on one and you have it. This is easier than the drag from window used by the other editors and means you can use a 'fulled' window if convenient.

The increased usability does not stop at the new item selection. When you have an object you will want to customise it (to change the text in a string, make it coloured or give it a 'macro' name for reference by the application) and a double click brings a large dialog with all the variables (other editors make you go to several places to make all the changes). Alternatively a single click produces a pop-up menu, just where the cursor is, with options available from: edit (like a double click); hide; unhide; flatten; snap; sort; and retype.

If you click on an icon or image, you can use a built in icon editor which is more convenient than having to use a separate one (though see later). The final option available is a test facility. Again unique to K-Resource, this allows you to do a simple test of your resource before you leave the editor. If you test a dialog, it will appear in the middle of the screen, fully animated, and allow you to click on buttons, edit strings, and use all the various parts to ensure correct operation. When you select an EXIT button an alert showing its number and name (if any) appears, and you can either continue or end the test. Similarly menus and alerts can be tested (anything unsuitable for testing, e.g. a tree with no exit button, is automatically untestable).

Error messages are provided in a very novel way. If you make a mistake, you do not usually get an alert, rather the erroneous item is surrounded by a thick, rounded rectangle linked to another box which explains the error. A very nice and useful touch, and one I hope others learn to emulate.

ADVANCED FACILITIES

K-Resource also makes some of the more advanced GEM resource facilities easily available. When DRI defined the resource structure they left a few spare flags around for programmers to use for special effects. These extra flags (obstate, obflags and obtype high byte) are included in the K-Resource flag setting dialog.

PROBLEMS!

Unfortunately K-Resource is not without its problems. The first I noticed was that you cannot load icons from other icon editors (indeed you cannot load icons at all, only edit them). If you have to make two versions of a resource for different resolutions, it is useful to be able to create a low resolution version from the high resolution file, by just loading in the correctly sized icons. This is partly solved by the fact that you can delete the old icon and then copy the new icon from another resource. This is risky though as it is critical that the order of the icons is the same in both resources if one application is to use both. Deleting and then copying is likely to alter the order.

The next problem I had was also with icons. I found it impossible to move a small image (an icon without a mask) just a fraction when it was at the bottom of a tree. This is because as soon as I started to drag it, an enormous 'shadow' was generated which fell off the bottom of the tree and prevented me placing it back down again. Similarly, I found it impossible to shrink an image box size to reduce its inverse-select area.

It may be that I make exceptional demands upon a resource editor, but another of the facilities I occasionally require is the generation of the C source code from which a resource can be recreated on another machine (an IBM for instance). Of the three resource editors available, only the

Digital Research version can produce the C source. I hope a future version of K-Resource will give this option too.

The above problems may seem trivial, especially as most users will not notice them, but there are other more serious errors. K-Resource occasionally just hangs, I'm not sure when, but it seems to be when you cancel an operation. Once hung, you have to reboot, and that means that you lose all your work. I also managed to bomb the system in the test mode by double clicking on a TOUCHEXIT button. The reason for this should be well known to the person who wrote K-Resource (in this situation the high bit is set in the returned 'hit-button' value, making it seem negative), and it worries me because it is a basic mistake and there may be more I haven't found. It is obviously necessary to save your resource often.

CONCLUSION

While there are a few problems they are relatively minor when weighed against the advantages that K-Resource gives you, and certainly less serious than those in the DRI editor. It really is much easier to use than the other resource editors, and is well worth adding to your set of utilities. Remember my reservation that you need other literature to tell you about resources and how to program for them though.

K-RESOURCE costs £39.95 and is published by Kuma Computers Ltd. 12 Horseshoe Park, Pangbourne, Berks RG8 7JW.

REVIEW

INTRODUCTION TO ST LOGO (A Tutorial)

Microdeal
£19.95
Mono/Colour

When the ST first appeared LOGO was included as one of the programming languages. The accompanying book was for reference and not a guide for beginners. Granted, many purchasers would want the high speed graphics of the ST coupled with the ease of LOGO and may well have used the language before but, on the other hand, lots of people will have come across LOGO for the first time and may well have been daunted by the reference book.

This utility from Microdeal is intended to fill the gap. There is little difference in reading something from a book or reading it from a monitor screen, however, in a case like this a screen based tutorial wins hands down. You will read about the demonstration then see it displayed right away, no need to sit down and type in the demo program first, time consuming and boring! I have always been of the opinion that to demonstrate computer techniques, you have to show the technique on the computer then let the user list and amend the program to experiment. Learning by doing is better than learning by reading.

The disk comes in the usual grey Microdeal two ring binder and is accompanied by a small (nine page) booklet explaining how to set up the tutorial. It includes a list of all the lessons and topics, a good idea as you will tend to forget the chapter and lesson number that you are working with.

The tutorial is better run on mono, though there is reference to colour in one of the demonstrations. I normally use a colour monitor and I found some of the the screens to have a bad choice of colour, making it very hard to read.

LOGO is a language that I have read about over the years without taking any interest in it. I decided to have a go when I bought the ST, but the book soon put me off. This tutorial is, however, very good, it even lets you type in commands and watch the results, although you can only type in what you are told to. This stops you fiddling about and losing the thread of the lesson. If you really want, you can exit the program and try out the programs with LOGO itself.

I found the lessons were very easy going, understandable and with good graphic examples. I got through the first half of the tutorial in very quick time. You tend to do this because you understand everything at the time, but you will have trouble remembering things later. It is really necessary to practise what has been shown to you, to use and amend the examples provided and to write your own programs.

This is really aimed at the beginner and is well constructed. I do not know how you will feel about the price, but I consider it well worth the money not to have to sit down and type in a lot of programs! Also, from personal experience, I know how much time is involved in writing such a (seemingly) short and easy program.

Mark Hutchinson



ON THE ST
Paul Woakes
MERCENARY
STunning!
NOVAGEN
MERCENARY—ESCAPE FROM TARG plus THE SECOND CITY
and the TARG SURVIVAL KIT of Maps, Plans and Novelette
THE ST COMPENDIUM EDITION £24.95
NOVAGEN SOFTWARE – SALES 142 ALCESTER ROAD BIRMINGHAM B13 8HS 021 449 9516

GOTO DIRECTORY

The GOTO DIRECTORY is a guide to retailers who provide product support for ATARI computers. Many of these retailers will supply Mail Order so if you have problems finding a supplier, turn to the GOTO DIRECTORY.

Retailers who are interested in an entry in this feature should contact the Editor on 0785 213928

A.S.WOOTTON & SONS,
116, Edleston Road,
Crewe,
CW2 7HD
Tel. 0270 214118

Nothing but ATARI. Authorised Service Centre with fast turnaround of all repairs. All Atari stock plus printers, joystick inserts and extension leads at good prices. Try us for repairs or purchases.

COMPUTER CENTRE,
174, High Street,
Hornchurch,
Essex
Tel. 04024 75613 or 44255

We have a large range of software, hardware, printers, interfaces, magazines and books. Full support given to interfacing, word processing etc. Computer repairs. We specialise in all home computers. Mail Order or personal callers welcome.

BITS AND PIECES,
10, North Street,
Strood,
Rochester,
Kent
Tel. 0634 716422

A NEW Atari only shop in the Medway area. XL/XE/ST always in stock. We are happy to demonstrate the latest software and offer the most friendly service. Remember we are ATARI only. We stock the best.



LADBROKE COMPUTING,
33, Ormskirk Road,
Preston,
Lancs. PR1 2QP
Tel. 0772 21474 or 0772 27236

We offer full service and support for any Atari and have all peripherals and available software in stock. Come to the shop for personal service or try us for Mail Order. Either way you'll be pleased you did.

INTOTO,
1, Heathcoat Street,
Hockley,
Nottingham,
NG1 3AF
Tel. 0602 410987

A comprehensive range of hardware, software, peripherals, joysticks, books and magazines etc. Please call or ring for helpful, friendly support.

PEATS ELECTRONICS,
25, Parnell Street,
Dublin 1,
Ireland
Tel. (00)01 749972/3/4

We stock a full range of Hardware, Software, Interfaces, Printers and accessories. The fullest support for Atari in Ireland. Mail order throughout the U.K.

FEE'S
194, High street,
Scunthorpe,
S.Humberside
Tel. 0724 857652

Your Atari specialist in Humberside for hardware, software and publications. Open 9.30 a.m. - 5.30 p.m SIX days a week. For personal attention ask for Nick or Frances.

MICROBYTE,
71, Seaview Road,
Liscard,
Wallasey,
Merseyside, L45 4QW
Tel. 051 630 6933

Tired of high prices , poor service and hidden charges from other Mail Order retailers? Try us for the latest titles and U.S. mags. Visit or call anytime up to 6 p.m.

JENNINGS STORES,
248, Hertford Road,
(Nr. Green Street),
Enfield,
Middx
Tel. 01 804 1767

Very large range of English and American software available as well as the very latest in hardware.

SOFTWARE EXPRESS,
514-516, Alum Rock Road,
Alum Rock,
Birmingham 8
Tel. 021 328 3585

We are a company dedicated to supplying ALL your Atari needs which also includes a PERSONAL IMPORT SERVICE and an out of warranty repair service. Phone 021 328 3585

MICRO-TRONICS
27a, Market Street,
Tamworth,
Staffs,
B79 7LR
Tel. 0827 51480

Hardware, Software, peripherals, books, magazines, accessories etc. etc. We specialise in ATARI, Amstrad, Commodore, Tatung computers. Pay us a visit OR use our Mail Order service. ACCESS & VISA accepted.

TRIONIC,
144, Station Road,
Harrow,
Middx. HA1 2RH
Tel. 01 861 0036

Software, peripherals, books and magazines. A comprehensive range for Atari. Amstrad, Comm- odore and Spectrum. Try our late night shopping. Open 10 a.m. to 8 p.m. Monday to Saturday. Give us a call or pay us a visit.

RADFORD HI-FI LTD.,
52, Gloucester Road,
Bristol,
Avon
Tel. 0272 428247

We stock and support a comprehensive range of products for Atari. Huge range of software from educational to small business (plus games of course). Word processing packages. Printers. All for the best computers. ST's available from stock.

YORK COMPUTER CENTRE,
7, Stonegate Arcade,
York,
Tel. 0904 641862

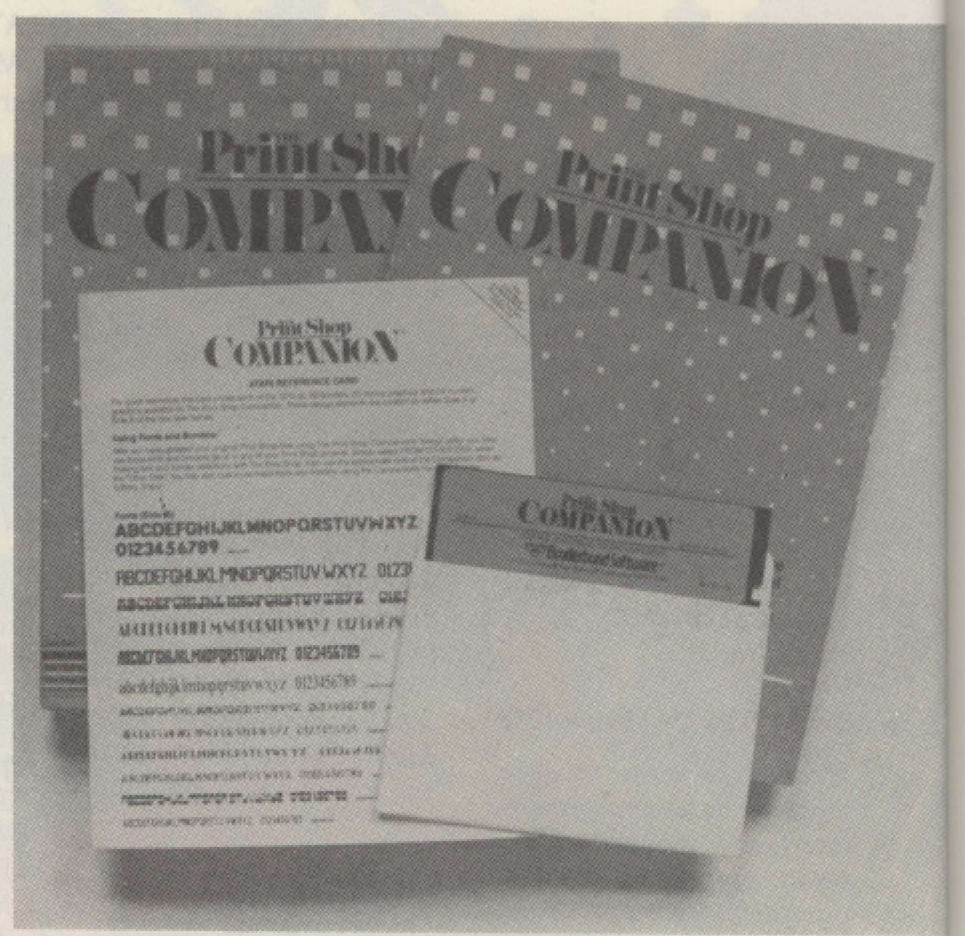
Top American and English software - over 1000 titles! Hardware, books, magazines, accessories. If you need anything for your Atari, try Yorkshire's widest and most comprehensive range of products for your machine.

MIDLANDS ATARI CENTER
212, Broad Street,
Birmingham,
B15 1AY
Tel: 021 643 9100

Specialist Atari dealers with the biggest display of Atari software and hardware outside London. Whatever your needs - ST, 8-bit or VCS - a visit to our large showroom will not be wasted. We would love to see you!

THE PRINT SHOP COMPANION

Broderbund



reviewed by Alan Goldsbro

If you've heard the old adage 'Sequels are rarely equals' then fear not for The Print Shop Companion is one of those sequels that not only equals but in fact adds considerably to the original. When the Editor offered me the opportunity to review this package, I couldn't wait to get my hands on it. At last, I thought, an enhancement to the much used Print Shop. I won't make you wait until the end of this review to let you know whether it is a good offering or not. The answer is a qualified yes! Before you drop what you're doing however, and go out and buy it be warned that it will only run on 64k XL and XE models.

Print Shop Companion is designed to compliment the Print Shop and if like me you've struggled to create quality icons, moaned about the borders, swore at the fonts and wondered what on earth to do with Tile Magic, then despair no longer – help is at hand. The Print Shop Companion has six sections. Using the tried and tested modus operandi, it smoothly allows you to take control from booting up the disk. The first requirement is Program Set Up – similar to the original. It asks for Print Shop to be placed is the drive so it can modify the disk to accept true 'companionship'. All this does really is, a) turn the background colour from Atari blue to black and, b) add a command to the graphics, borders and font files so they will accept the Companion. It also obtains details about your printer configuration from the original disk. Once this has been achieved its on to the main menu.

The first section is the new Graphics Editor+. Based on the original it has 18 new commands and, without going into full detail, it's fair to say that the majority of commands seen in most graphics programs are available. Worth mentioning are – scrolling picture, undo, pattern, mirror, flood fill, negative, tile, text and superimpose. A notable omission from the editor is the wrap-round which was quite a handy feature in the original, however the new commands easily make up for it. The cursor now moves faster on the screen and as before you control it by Joystick, keyboard or light pen, which has not got any easier to use. The text is only one size and in the standard Atari font. In all, the graphics editor+ is a vast improvement on the original and really is a pleasure to use.

Leaving the editor and returning to the main menu is instantaneous as the program makes use of the XL/XE extra RAM. The next section is the Border Editor, which consists of three editing boxes where you can modify existing borders from the nine on the Print Shop or any of the fifty stored in the Companion. The edit boxes are really a smaller version of the original Graphics Editor (Print Shop) and are just about as difficult to use. The boxes represent: 1) the corners, 2) the top and 3) the sides. As you draw the area around the edit boxes is filled in, either across the screen or down the side depending upon what edit box you are in. Extra commands are flip horizontal/vertical, negative colour, flip top/button, flip right. One feature which isn't available is the opportunity to 'get' an icon and place it in a box to use as a border, this could make the border editor really something! A compensation is the ability to copy the current edit box to the other two.

The Font Editor is the third section and again you are presented with another editor box and the opportunity to either edit the existing eight fonts from Print Shop or any of the new twelve from the Companion. Creating a font is a multiple step process. Select your font from the existing ones or start from the standard Atari reference font. Create or modify as you like (or can). Store them temporarily in memory and then save the entire font to your data disk. This is handy when you want that elusive pound (£) sign, just alter any character to suit and store. If you use the reference font you can select this in any of three sizes however you cannot, unfortunately, do this with the other fonts. A number of the Editor+ commands are available with extras such as Index, guide lines and redo. As you work, the memory used in creating a font is displayed. If you are creating a large font with embellishment then you may have to work on the alphabets in two goes, for example on a small font the memory used is 27% and a large font could easily be 90%. With every extra pixel used, it could easily push you over the top. One other feature is the command Flip Backward, you can create your own backward font for reading in mirrors!



HAPPY BIRTHDAY DAN

JUNE 1987
VACATION TIME

MONDAY 1 — SLEEP. SLEEP. SLEEP
TUESDAY 2 — SLEEP. SLEEP. SLEEP
WEDNESDAY 3 — SLEEP. SLEEP. SLEEP
THURSDAY 4 — SLEEP. SLEEP. SLEEP
FRIDAY 5 — SLEEP. SLEEP. SLEEP
SATURDAY 6 — CARTOONS. SLEEP. SLEEP
SUNDAY 7 — SLEEP. SLEEP. SLEEP

SUMMERTIME *YAY*

Tile Magic is really a spin off from the kaleidoscope feature of Print Shop. This section gives you eleven different moving patterns, which can be frozen and saved to disk or flipped to the Graphic Editor+ to add your own special touches. One interesting feature here is the instant flipping between tile magic and graphic Editor+ and vice versa. There is nothing really much more to say about tile magic except that it will probably get used as much as the kaleidoscope!

The fifth section covers Creature Maker, a sort of computer mix and match book that my kids used to play with. According to the manual there are 1000 possible configurations available. As with the tile magic, flipping back and forward to the Graphic Editor+ is available and scrolling picture to simulate walking.

The final section of the Companion is Calendar to create weekly or monthly calendars using any of the fonts. Graphics in a choice of two sizes can also be used. The range of year is from 1753 to 9999 i.e. Georgian calendar. Whether you choose a weekly or monthly calendar you can type in your special dates or reminders. The added bonuses are it can be saved to a data disk for later use giving you the opportunity to dump to printer without going through Print Shop. I really like this section, for years I've been wanting a monthly calendar that printed out days similar to those on large wall planners and now I've got it – the only problem is I don't have time to follow it!!

That just about concludes the summary of The Print Shop Companion although there are a few more extras such as 20 bonus graphics from Broderbund Software products i.e. Kareteka, Spare Change and Loderunner, 20 numeric graphics 0 – 9 in left and right formats and 4 date endings, st, nd, rd and th. These are superimposed to make up date icons. Final extra is the ability to leave the main menu and load in the Print Shop disk. Unfortunately this does not worth the other way round.

Well I think that just about covers the Print Shop Companion. Yes it truly is a companion and well worth the price. The manual is 38 pages long and this time you will need to read it before attempting some of the sections. I thoroughly enjoyed using the Companion and for most people the balance between application/ children's use will be acceptable. I would have preferred a label maker instead of the Creature Maker/ Tile Magic sections but you can't have everything.

Print Shop Companion is available from Software Express to whom I'm indebted for the loan of the program.

Alan Goldsbro

15. The SLAVE

Let's suppose that you've played a few Adventures. You've been bitten by the 'Adventure bug' and you decide to have a go at writing an Adventure of your own. You've got a few ideas floating around in your head and the programming side of it doesn't seem too difficult. After all, it's just text input and text output. Right?

The ideas begin to multiply and conflict with one another, but as they evolve, only the best ideas survive. After a little more day-dreaming, you come up with an original theme. You sift out the most intriguing puzzles from the back of your mind and devise a cunning map on the back of a shopping list. This game is going to be brilliant! When you unleash it onto an unsuspecting world, they will herald you as the greatest Adventure writer of all time.

Now all you've got to do is put all the pieces together and write the code. Then everything collapses in a heap. How on earth do you even start to write an Adventure program?

Writing an Adventure is quite a monumental task, but it is not difficult, just tedious. If you are serious about writing an Adventure (whether for fun or profit), there are probably three approaches you could take. Firstly, you could do an immense amount of research into human psychology, database design, parsing techniques, artificial intelligence, compiler design and so on and hopefully write a complete Adventure from scratch in the language of your choice. This may take as long as two years, so you'd have to be pretty dedicated. I have taken this approach in my own spasmodic Adventure writing pursuits and some of my research notes are over five years old!

Secondly, you could take a listing of an existing Adventure, decipher it to see how it works and modify the database and logic processing parts to create your own game. There are a number of books and magazine articles that you could use to help you along the way. A friend of mine followed this approach just recently by following an ANALOG listing and came up with quite an impressive Adventure in just a few weeks!

Thirdly, you could use an Adventure writing utility. There are a number of these around including commercial products such as Adventure Master and Adventure Writer or the more primitive public domain offerings such as Max Manowski's Adventure which is available from Antic, Page 6 and various user groups. That brings us to the subject of this month's column, The Slave.

THE SLAVE

The Slave is the latest offering in the area of Adventure writing utilities available for the Atari 400/800/XL/XE. The hype in the advertisements make it out to be the greatest thing since the ring-pull beer can. Unfortunately, this is just not so. Writing Adventures is downright hard work and The Slave doesn't make the job any easier – you just do things differently. It is a tool to help you get the job done. Nothing more, nothing less. Once you've accepted that fact, you are less likely to be disappointed with the product.

The creative aspect of Adventure writing is still up to you. No Adventure writing utility will help you design an Adventure – and neither should it. YOU must create the plot, draw the map, design the puzzles, select the vocabulary, create the characters, write all the room and object descriptions, predict the player's actions and decide how to handle them. If you can't write, can't spell or can't design logical puzzles (and logical solutions), then Adventure writing is not for you. If you fall into this category, then you might as well stop reading right now.

For those of you still with me, I hope I've softened your expectations so that you don't expect too much from The Slave. Now, let's get down to the nitty gritty evaluation.

FIRST IMPRESSIONS

I was bubbling with enthusiasm when the editor told me that The Slave was on the way for review – I'd never been sent anything to review before. When it arrived, I couldn't wait to get started. I ripped the parcel open to find a disk and a bulky manual. The loading instructions said to insert The Slave disk and turn on the computer. When I did, I was rewarded with a screen full of garbage! Hey, what's going on here? When I double checked the instructions, I found a paragraph AFTER the loading instructions which told me that I needed BASIC. Sheesh!

I rebooted with BASIC.

This time a rather impressive GRAPHICS 8 title screen came up accompanied by a "horribly cute little tune, totally out of character with the screen display itself". At least that's how the manual described it.

When the tune finished, another program loaded and I was presented with a GRAPHICS 0 menu in Atari's default blue. None of the options made much sense, so I started at the top to see what would happen. Another program loaded. Another menu presented itself in default blue. And again, nothing made much sense. After experimenting a bit, I was able to achieve nothing except considerable apprehension because of the way the disk drive kept turning on and off for no apparent reason. I tried to get back to the first menu, but couldn't. It turns out that you have to reboot (by pressing SYSTEM RESET) and repeat the title page/cute little tune sequence.

The next time around, I picked a different option from the main menu and ended up in the same state of confusion. It looked like I'd struck a dog! At this point, I rebooted the system with trusty old DOS 2.0 and did a disk directory. Nothing! It was time to heed the old hacker's proverb, 'If all else fails, read the manual'.

THE MANUAL

The Slave manual consists of 126 pages of blurry, draft quality, dot-matrix printing (without lower case descenders) printed on single-sided, tractor feed paper. In other words, a backyard job. But that's okay. I've got a lot of respect for

by Garry Francis

anyone who tries marketing their own product – PROVIDING THEY'VE GOT A PRODUCT WORTH MARKETING!

A first glance at The Slave manual was encouraging. It had a good contents page and everything appeared to be laid out in a logical order. Little was I to know what the future held in store.

If you ignore the author's tendency to pat himself on the back, then a couple of the early chapters make interesting reading. These early pages also told me what I'd already learnt the hard way, mainly that The Slave manual is essential to learn how to use the program. "Ignore it at your peril – without it you will go nowhere very quickly indeed." This advice should have been plastered all over the front cover!

I spent the next week reading The Slave manual from front to back. Mind you, this was done while travelling to and from work and some parts of the manual were virtually impossible to fathom without a computer in front of me. By the time I'd finished the manual, I felt like saying 'So what?'.

My initial impressions had been misleading for the manual turned out to be horribly inadequate and broke many of the rules of good documentation. For example, it was not broken down into small manageable chunks, it did not flow properly from section to section and there was no indication of how the minor parts fit into the whole. Nothing seemed to make sense.

THE SAMPLE ADVENTURE

It struck me that the next step was to try and run the sample Adventure referred to in the advertisements and the manual. The manual didn't actually tell you how to do this, but I thought I'd be able to work it out with a bit of trial and error. By this time, I'd discovered that the disk was formatted using DOS 3.0. (Why on earth anybody would want to use DOS 3.0 is a complete mystery to me.)

Anyway, I re-examined the disk and found that it had 15 files. The purpose of these files wasn't mentioned anywhere. I could see that I was going to have to do this the hard way, so I started out by converting all the files to DOS 2.0 using Matthew Jones' 'Access III' from page 6 issue 14. Lo and behold, the program wouldn't run in DOS 2.0! I wondered why.

When I examined the files, I found that five of them were written in BASIC. Hmm. Maybe I could browse through the listings, work out what they were supposed to do and why they wouldn't work in DOS 2.0 and perhaps make a couple of little changes so that they made more sense. I particularly wanted to avoid the reboot every time you tried to return to the main menu.

Unfortunately, the author had put some protection in the programs to avoid them being listed. It was all pretty standard stuff so I promptly proceeded to unprotect them. During the process I discovered that the programs had been written using Revision B BASIC. This was evident by the way the programs had 'grown' each time they had been saved. By fiddling with BASIC's zero page pointers, I was able to shrink the programs back to their proper size. I also discovered that the author used some pretty sloppy programming techniques (such as premature exits from FOR...NEXT loops) and that two of the programs had not been through the standard LIST, NEW, ENTER procedure to clear out the variable name tables.

I realise that all this is of little or no interest to the end user, but it showed all the signs of an amateur. I was building up a very strong image of The Slave's author and it wasn't very favourable!

Once everything was all cleaned up, I was able to work out how things fitted together. With my new found knowledge, I cross referenced all the files with the menus in the manual and started to see the light at the end of the tunnel. Then I was struck a crushing blow. I suddenly realised that there was no sample Adventure! Bloody hell! Talk about false advertising! I was shattered.

THE SLAVE

By this time, I'd wasted a month or so (in between other projects) just trying to understand how The Slave was supposed to work and I still hadn't written so much as one byte of an Adventure! The deadline for this review was rapidly drawing near and I started to panic.

I couldn't cheat. I couldn't just study the sample Adventure (because there wasn't one) and I couldn't think of any other shortcuts. There was nothing for it but to write an Adventure from scratch and try to get it running with The Slave.

Luckily for me, I love writing Adventures. I've written a few before and knew exactly what to do. I christened this one 'baby Adventure' because of its size and came up with a cute little map, an objective and a couple of fairly straightforward puzzles. Once the Adventure was designed (on paper at least), the next step was to turn it into a program using The Slave. I did so with a great deal of apprehension.

I started at the beginning of the manual and worked through it very slowly and very cautiously. It rarely presented anything in a logical order, so I had to constantly flip forwards through its pages in search of the missing instructions. In many cases, the missing instructions were obscure, ambiguous or weren't to be found anywhere.

While building my Adventure, The Slave constantly did things that I didn't expect, like adding bits that I didn't want added. Whenever this happened, I backtracked and tried again. And again...and again...until I eventually got it right. In fact, I started the entire Adventure from scratch at least three times!

When the Adventure was finished, The Slave compiled it without any complaints, but it wouldn't run. Don't ask me why. I'm sure I did everything properly, but the manual is so vague on some points, that I couldn't be sure. In the end I gave up in despair. If I had pushed on any further, I'm sure I'd have had a nervous breakdown and I didn't think it was worth it.

A TYPICAL SESSION WITH THE SLAVE

Despite my inability to get the Adventure running, I was able to sort out most of The Slave's illogical menus and its obscure way of handling things. Here is a brief account of what to expect.

Begin by making a backup of both sides of The Slave, then put the original away in a safe place(?). Side 1 contains all The Slave programs and side 2 contains DOS 3.0 and all its support files. You will need to use both sides during a typical session, so you might want to save yourself some disk swapping by copying all the DOS 3.0 files onto side 1. Before you start writing your Adventure, format three disks with DOS 3.0. One is needed for all the text files, one for all The Slave's working files and one for the final game disk.

Boot The Slave and wait for the main menu to load. This has 9 options as listed below:

Descriptions editor
Exits editor
Flags and object locations
Compile adventure code
Vocabulary compile
Sound editor
Rearrange data files
Header creation
BASIC mode

continued overleaf

Each of these options except Rearrange data files loads another program, so the normal sequence of events is to make a menu selection, wait for the program to load, remove The Slave disk, insert the appropriate data disk, do some editing, save your work to the data disk, remove the data disk, insert The Slave, reboot the system, wait for the main menu to load and repeat the whole process over and over again until your Adventure is finished.

The descriptions editor is nothing more than an extremely primitive editor which you use to enter all the text that will be output by the game. The Slave divides this text into four files (which are not DOS compatible) for messages, objects, locations and examine.

The exits editor allows you to create the map for your Adventure onto a DOS 3.0 file called EXITS.SLV.

The flags editor allows you to set up flags, initialise the locations of objects and decide whether an object is movable or not. This information is saved onto FLAGS.SLV, OBLOC.SLV and IMMOVE.SLV respectively.

The most complex part of the Adventure writing process is the logic. The manual warns that "the faint of heart should turn back now". The Slave handles logic in the most cumbersome way that I have ever encountered in an Adventure writing utility. You must write the logic in a sort of pseudo language that the author calls Slave Adventure Language. SAL strikes me as being a horribly disorganised mess. It is somewhat similar to a job control language on a mainframe, but less logical. At first glance, the range of commands looks pretty impressive, but a closer look reveals that many of these are necessary to account for The Slave's other limitations. The Slave makes you write the code for the entire program, not just the processing of actions as with other Adventure writing utilities. So how do you write with SAL? Hang onto your hats. You're going to love this next bit. You must first go to BASIC and type in your SAL commands within BASIC DATA statements! That's right...in BASIC! I couldn't believe it! Talk about a half-baked product! Why not just write the whole thing in BASIC in the first place?

Fortunately, there is a sort of skeleton set of DATA statements included on the disk which you can use as a guide. Once you've finished entering your SAL commands, save the file using LIST "D:SLAVE.ext". You must use SLAVE as the filename, but you can use any extender except XXX. This has a special purpose as discussed below. You can now use the main menu option labelled compile adventure code to create two files called DATAFILE.ext and DATAFILE.XXX. This is why you can't use XXX as an extension.

You must go through a similar process of writing BASIC DATA statements to define your verbs and nouns, then use the vocabulary compile option to create VERBS.SLV and NOUNS.SLV.

The next item on the main menu is the sound editor. I think you can skip this one as a bad joke.

The rearrange data files option goes through a lot of disk activity, but I don't know what it does.

By now, you should have one disk with the text for messages, objects, locations and examine and a second disk with all the following files:

EXITS.SLV
FLAGS.SLV
OBLOC.SLV
IMMOVE.SLV
DATAFILE.ext
DATAFILE.XXX
VERBS.SLV
NOUNS.SLV

Go to DOS, copy SLAVEDRI.VER from The Slave disk to the third blank disk, then append all the above files to it. This takes about 18 disk swaps!

Finally, the header creation option allows you to prepare a GRAPHICS 0 title screen and write a header to the disk you just created with the expanded SLAVEDRI.VER file on it. If everything has gone to plan, you should now be able to boot this disk. If everything hasn't gone to plan ...

A FEW OBSERVATIONS

The Slave is not for beginners. Don't even THINK about using it unless you're an experienced programmer and you have a thorough understanding of how an Adventure works.

Using The Slave turned out to be a disk swapping nightmare. You need five disks to create a game and must constantly swap amongst them. Having two disk drives is of no benefit because The Slave only supports one drive.

Flags are used so frequently in Adventures that I normally associate a flag with every object. Thus flag 1 is used for object 1, flag 2 for object 2 and so on. Unfortunately, The Slave's system doesn't allow this flexibility. Flags 0 to 29 are reserved for special purposes and therefore can't be associated with objects 0 to 29. You can either start numbering your objects with 30 or forget about any one-on-one flag to object association. If you adopt the latter course, your logic in the processing of verbs will need more tests and be much harder to follow.

Unfortunately, The Slave also fails to provide flags for rooms. These are normally used for functions like 'Does the room contain water?', 'Can the thief enter this room?', 'Has the player visited this room before?' and 'Is the room dark?'. These will have to be simulated using extra tests in the logic processing part.

The final Adventure is totally disk based and seems to always take two disks (or two sides of one disk) regardless of how big the Adventure is. I couldn't get my Adventure to run, but it certainly appears that ALL text is read from the disk only as needed. None of it is kept in memory. You know what that means...lots and lots of disk activity. I love disk intensive Adventures!

SUMMARY

I mentioned earlier that the author of The Slave had a tendency to pat himself on the back. This got me really angry while I was battling to get the program to even work, but it was brought to a head by the following paragraph:
"Slave Driver is thus the master control program, the 'guts' of the Slave system, and, throwing modesty to the four winds, is quite brilliant! Anyone out there want to argue?"
Yes! I want to argue!

The Slave is a dog of a program. The only feature it has is consistency. It is consistently bad! In fact, in my six years in the computer business, this is unquestionably the worst single piece of software that I've ever been unfortunate enough to encounter on ANY computer. It should never have been released. It is obviously a backyard product written by an amateur. It has the worst user interface and the worst human engineering that I've ever encountered and obviously has no regard at all for the end user. I doubt that it's even been tested. In fact, it strikes me as a half-finished product that's still in the experimental stages.

As an Adventure writing tool, it makes a good drink coaster. It doesn't come within a bull's roar of other Adventure writing utilities – even those in the public domain. On a score out of ten, I'd give it a one...and even that's being generous!

If you're serious about writing Adventures, this product probably won't help you. You'd be better off buying a good book on the subject. ●

Menu

by ATA ATUN
Northern Cyprus

When you have lots of disks and work with them quite often, the time comes when you are fed up with inserting the DOS disk just to see what programs are on a disk, how many sectors are left or to rename or delete a file. MENU will help you by making a lot of the DOS based tasks easier you will find it a great help when you are in a hurry.

Once you have typed in the program and checked it with TYPO 3, SAVE it on a disk which has DOS.SYS on as "D:MENU", then RUN it. Call the 7th Option which is Make Autorun.Sys and type in the following line:

POKE 710,68: POKE 712,68: POKE 752,1: POSITION 12,10: ? "LOADING MENU": RUN "D:MENU"

and hit RETURN.

Now just switch the computer off and on again. The MENU program will autoboot and Run itself. If it doesn't work, please repeat starting from the 7th option again, checking that the statement above is correct. You can of course substitute any one line BASIC statement of your own.

STRUCTURE OF MENU PROGRAM

Strings and Variables

A$ – Records file names from the disk. Maximum length 17 places.
BIG$ – Longest string that stores 26 program names, each starting with a different letter as an entry code.(26 letters in alphabet)
T$ – Transfer string. Compares contents of strings in sorting process.
TR$ – Transfer string.
D$ – Program name string.
TR1$ – Program Name string
NM1$ – Old Name of Program string.
NM2$ – New name of Program string.
DISK$ – Complete program name string.
A1$ – Command string to be used in AUTORUN.SYS

```
EI 1 REM ********************************
RK 2 REM *           M E N U             *
XP 3 REM *              by               *
QH 4 REM *  Ata Atun, Northern Cyprus    *
EC 5 REM * ----------------------------- *
IZ 6 REM *  PAGE 6 MAGAZINE - ENGLAND    *
EO 7 REM ********************************
NN 8 REM
VH 60 CLR :TRAP 240
RU 70 DIM A$(17),BIG$(442),T$(17),TR$(15)
   ,D$(14),TR1$(12),NM1$(12),NM2$(11),DIS
   K$(27),A1$(106)
TU 80 BIG$(1)=" ":BIG$(442)=" ":BIG$(2)=B
   IG$:A1$(1)=" ":A1$(106)=" ":A1$(2)=A1$
XN 90 OPEN #2,6,0,"D:*.*":OPEN #3,4,0,"K:
   ":DISK$="D:":G=2170
WY 100 GRAPHICS 0:POKE 752,1:POKE 712,114
   :POKE 710,28:POKE 709,0
KU 110 ? "K":REM DRAWING THE PAGE
ZS 120 POSITION 11,0:? " DISK DIRECTORY "
BQ 130 FOR X=2 TO 37:POSITION X,1:? "—":P
   OSITION X,18:? "—":POSITION X,22:? "—"
   :NEXT X
IF 140 FOR Y=2 TO 21:POSITION 1,Y:? "|":P
   OSITION 19,Y:? "|":POSITION 38,Y:? "|"
   :NEXT Y
RA 150 Y=1:POSITION 1,Y:? "┌":POSITION 19
   ,Y:? "┬":POSITION 38,Y:? "┐"
XE 160 Y=18:POSITION 1,Y:? "├":POSITION 1
   9,Y:? "┴":POSITION 38,Y:? "┤"
MT 170 POSITION 1,22:? "└":POSITION 19,19
   :? " ":POSITION 19,20:? " ":POSITION 1
   9,21:? " ":POSITION 38,22:? "┘"
UO 180 Y=2:POSITION 2,Y:? "code":POSITION
    20,Y:? "code":POSITION 2,Y+1:? "♥":PO
   SITION 20,Y+1:? "♥"
KB 190 P=0:REM TRANSFER FROM DISK
HN 200 POSITION 12,19:? " TRANSFERRING ":
   POSITION 11,20:? "Titles  From  Disk"
BU 210 INPUT #2;A$:P=P+1
SF 220 B=17*(P-1)+1:E=B+16
MR 230 BIG$(B,E)=A$:GOTO 210
EJ 240 CLOSE #2:N=E
YP 250 TRAP 470:GOSUB 880:POSITION 11,19:
   ? " SORTING  TITLES "
RO 260 POSITION 3,20:? "In Alphabetical O
   rder from  Z to A.":POSITION 4,21:? "P
   LEASE WAIT...( )'s Completed."
VK 270 F=INT(E/17)+65
JD 280 FOR LOOP=1 TO E STEP 17
RA 290 F1=INT(LOOP/16):POSITION 19,21:? C
   HR$(F-F1)
VJ 300 FOR J=1 TO N-17 STEP 17
RM 310 IF BIG$(J,J+13)>BIG$(J+17,J+30) TH
   EN T$=BIG$(J+17,J+33):BIG$(J+17,J+33)=
   BIG$(J,J+16):BIG$(J,J+16)=T$
GH 320 NEXT J
GQ 330 N=N-17:NEXT LOOP
```

```
TP 340 GOSUB 880:POSITION 11,20:? " DISK
   DIRECTORY "
IX 350 E1=INT(E/17)
RQ 360 FOR CYC=1 TO E1-1
FY 370 B=17*(CYC-1)+1:E=B+16
IG 380 IF CYC<=13 THEN X=4:Y=CYC+3
EW 390 IF CYC>13 THEN X=22:Y=CYC-10
EX 400 TR$=BIG$(B+2,E)
IN 410 IF BIG$(B,B)="*" THEN POSITION X-1
   ,Y:? "*":POSITION 8,1:? "Locked Files
   (*) marked"
MY 420 POSITION X-2,Y:? CHR$(192+CYC)
HE 430 POSITION X,Y:? TR$
HK 440 ? "↓":NEXT CYC
LV 450 B=B+17:E=B+14
ER 460 POSITION X,Y+1:? BIG$(B,E)
PX 470 CLOSE #1:DISK$="D:":GOSUB 880:POSI
   TION 2,19:? "1-Load-Run  2-Rename 3-De
   lete 4-Lock"
OA 480 POSITION 2,20:? "5-Unlock   6-Form
   at    7-Autorun.sys":DLT=0:LCK=0:UNL=0
   :NM1$="              "
DA 490 NM2$="              ":POSITION 2,21:
   ? "  Please input your choice NUMBER
   █"
AP 500 GET #3,A:IF A<49 OR A>55 THEN 500
RW 510 IF A=49 THEN 590
VB 520 IF A=50 THEN GOSUB 880:POSITION 12
   ,19:? " RENAME A FILE ":GOTO 730
NW 530 IF A=51 THEN GOSUB 880:POSITION 12
   ,19:? " DELETE A FILE ":GOTO 820
EZ 540 IF A=52 THEN GOSUB 880:POSITION 12
   ,19:? "  LOCK  A FILE ":GOTO 920
OG 550 IF A=53 THEN GOSUB 880:POSITION 12
   ,19:? " UNLOCK A FILE ":GOTO 1010
MP 560 IF A=54 THEN GOSUB 880:POSITION 12
   ,19:? " FORMAT A DISK ":GOTO 1110
ZZ 570 IF A=55 THEN GOSUB 880:POSITION 10
   ,19:? " AUTORUN.SYS FILE ":GOTO 1560
VF 580 RUN
XY 590 POSITION 2,19:? "To  LOAD & RUN
   a  program  in  the":POSITION 2,20:? "
   Directory, you  must  hit  "
RH 600 POSITION 29,20:? "the  code":POSIT
   ION 2,21:? "key on the left side of th
   e Program."
BD 610 CLOSE #2:GET #3,A
NL 620 REM RUNNING THE REQUESTED PROG.
BC 630 P=A-64:B=17*(P-1)+1:E=B+16
RT 640 D$(1,2)="D:"
GV 650 TR1$=BIG$(B+2,B+12)
SJ 660 IF ASC(TR1$(9,9))>47 THEN FLG=1
DP 670 FOR X=1 TO 8:IF ASC(TR1$(X,X))<48
   THEN POP :GOTO 690
MG 680 NEXT X
IM 690 D$(3,2+X)=TR1$(1,X)
DG 700 IF FLG=1 THEN D$(X+2,X+2)=".":D$(X
   +3,X+5)=TR1$(9,11):TRAP 720
HZ 710 ? "↰":POSITION 10,10:? "LOADING ";
   D$:RUN D$
IT 720 ENTER D$:REM RENAME SECTION
TJ 730 DLT=0:UNL=0:LCK=0:NM1$="
    ":NM2$="              ":DISK$="D:"
IM 740 POSITION 2,20:? "Type Old name of
   File :";:INPUT NM1$:POSITION 2,21:? "T
   ype New name of File :";:INPUT NM2$
EH 750 FOR X=1 TO 12:IF ASC(NM1$(X,X))<45
    THEN POP :GOTO 770
MD 760 NEXT X
CC 770 DISK$(3,X+2)=NM1$:DISK$(X+2,X+2)="
   ,":DISK$(LEN(DISK$)+1)=NM2$:XIO 32,#1,
   0,0,DISK$:GOSUB 1290
FV 780 GOSUB 880:GOSUB 2130:POSITION 2,19
   :? NM1$(1,X);" renamed to  ";NM2$:X=0
IZ 790 POSITION 2,20:? "Would you like to
    RENAME another one":GOSUB 900
VI 800 GET #3,A:IF A=89 THEN CLOSE #1:GOS
   UB 880:GOTO 730
PS 810 GOTO 470
ZP 820 DLT=2:REM DELETE A FILE
LM 830 POSITION 2,20:? "Type  name  of  F
   ILE  to be  DELETED":POSITION 15,21:IN
   PUT NM1$:GOSUB 1290:DISK$="D:"
FN 840 DISK$(LEN(DISK$)+1)=NM1$:XIO 33,#1
   ,0,0,DISK$:GOSUB 880:GOSUB 2130:POSITI
   ON 9,19:? NM1$(1,X);" DELETED"
HY 850 DLT=1:DISK$="D:":GOSUB 1480:POSITI
   ON 2,20:? "Would you like to DELETE an
   other one"
MR 860 POSITION 6,21:? " YES =  Y
   NO =  N ":GET #3,A:IF A=89 THEN GOSUB
   880:GOTO 820
QE 870 GOTO 470
GP 880 REM CLEARING MESSAGE AREA
OS 890 FOR Y=19 TO 21:POSITION 2,Y:? "
                                   ":NEX
   T Y:RETURN
ZS 900 POSITION 6,21:? " YES =  Y
   NO =  N ":RETURN
ZS 910 REM LOCK  A FILE
VG 920 DLT=0:UNL=0:LCK=2:GOSUB 880:POSITI
   ON 13,19:? " LOCK A FILE "
LI 930 POSITION 2,20:? "  Write name of
   FILE to be locked":POSITION 16,21:INPU
   T NM1$:GOSUB 1290
LL 940 DISK$="D:":DISK$(LEN(DISK$)+1)=NM1
   $
ZD 950 XIO 35,#1,0,0,DISK$:GOSUB 880
OQ 960 LCK=1:DISK$="D:":GOSUB 1480
MY 970 GOSUB 880:GOSUB 2130:POSITION 9,19
   :? NM1$(1,X);" LOCKED"
XX 980 POSITION 2,20:? "Would you like to
    LOCK another File":GOSUB 900
TF 990 GET #3,A:IF A=89 THEN 920
RF 1000 GOTO 470
EC 1010 REM UNLOCK A FILE
VZ 1020 GOSUB 880:POSITION 11,19:? " UNLO
   CK A FILE "
GK 1030 POSITION 3,20:? "Write name of FI
   LE to be unlocked":POSITION 14,21:INPU
   T NM1$
WN 1040 DISK$="D:":DISK$(LEN(DISK$)+1)=NM
   1$
NK 1050 XIO 36,#1,0,0,DISK$
QV 1060 GOSUB 880:GOSUB 2130:POSITION 9,1
   9:? NM1$(1,X);" UNLOCKED"
FZ 1070 POSITION 2,20:? "Would you like t
   o UNLOCK another one":GOSUB 900
OS 1080 UNL=1:GOSUB 1290
```

HOW THE PROGRAM FLOWS

70-100 – DIMensioning, Opening Channels, text graphic plus screen and border color.
100-180 – Drawing main MENU Page to screen.
190-240 – Transferring all of the program titles from the disk.
250-330 – Sorting in Alphabetical order the program titles.
340-460 – Printing program titles to the main page, in alphabetical order with necessary single letter entry codes.
470-580 – Printing -7- choices of MENU program and requesting an entry.
590-710 – 1st choice. Load-Run section. LOADs and then RUNs the requested program.
720-810 – 2nd choice. RENAMEing an existing program on the disk, using XIO.
820-900 – 3rd choice. DELETing an existing program on the disk, using XIO. Visually you can see the deletion.
910-1000 – 4th choice. LOCKing an existing program on the disk, for over write protection, again using XIO. Visually you can see the locking with the -*- mark.
1010-1100 – 5th choice. UNLOCKing an existing program on the disk, using XIO. Visually you can see the unlocking. The lock sign -*- will disappear.
1110-1280 – 6th choice. To format a disk either Double Density or Single Density.
1290-1420 – Section that finds the place of the program title in the main MENU page.
1430-1550 – Section that specifically locates the title of the program.
1560-2160 – 7th Choice. AUTORUN.SYS to auto-boot the disk and RUN the requested program, automatically. The entry command must not be more than 106 letters and preferably no quotation marks be used.

```
AZ 1090 GET #3,A:IF A=89 THEN 1010
RH 1100 GOTO 470
NZ 1110 REM FORMAT A DISK
NO 1120 GOSUB 880:POSITION 11,19:? "FORMAT A DISK "
ZL 1130 POSITION 2,20:? "Single Density=S    Double Density=D"
GG 1140 POSITION 3,21:? " Please input your choice CODE "
HL 1150 GET #3,A:IF A=68 THEN 1180
VX 1160 IF A=83 THEN 1180
QK 1170 GOTO 1150
KT 1180 GOSUB 880:POSITION 2,19:? "Insert the DISK you wish to Format"
QI 1190 IF A=68 THEN POSITION 11,20:? "Double Density "
XY 1200 IF A=83 THEN POSITION 11,20:? "Single Density "
NU 1210 POSITION 7,21:? "Hit Any Key To Continue":GET #3,B:CLOSE #1
DO 1220 GOSUB 880:POSITION 8,20:IF A=68 THEN ? " DOUBLE DENSITY FORMAT ":GOTO 1240
JW 1230 IF A=83 THEN ? " SINGLE DENSITY FORMAT ":GOTO 1250
DM 1240 XIO 253,#1,33,127,"D1:":GOTO 1260
SY 1250 XIO 253,#1,33,87,"D1:"
NF 1260 GOSUB 880:POSITION 10,19:? "Format Complete":POSITION 2,20:? "Would you like to FORMAT Another Disk"
II 1270 GOSUB 900:GET #3,A:IF A=89 THEN 1110
SH 1280 GOTO 470
OY 1290 REM TO FIND THE PLACE OF TITLE
YB 1300 A$="
CO 1310 T$="             "
GX 1320 FOR X=1 TO 9
FF 1330 IF ASC(NM1$(X,X))=32 THEN A$(3,X+2)=NM1$(1,X):POP :GOTO 1360
WM 1340 IF ASC(NM1$(X,X))=46 THEN A$(3,X+1)=NM1$(1,X-1):A$(11,13)=NM1$(X+1,X+3):POP :GOTO 1360
LT 1350 NEXT X
EN 1360 IF UNL>0 THEN GOTO 1430
WW 1370 IF LCK>0 THEN GOTO 1430
BM 1380 IF DLT>0 THEN GOTO 1430
HS 1390 FOR X=1 TO 9
ZQ 1400 IF ASC(NM2$(X,X))=32 THEN T$(3,X+2)=NM2$(1,X):POP :GOTO 1430
EX 1410 IF ASC(NM2$(X,X))=46 THEN T$(3,X+1)=NM2$(1,X-1):T$(11,13)=NM2$(X+1,X+3):POP :GOTO 1430
LM 1420 NEXT X
KI 1430 REM LOCATING TITLE
AF 1440 FOR P=1 TO E1-1:B=17*(P-1)+1:E=B+16
HJ 1450 IF A$(3,13)=BIG$(B+2,B+12) THEN POP :GOTO 1470
IO 1460 NEXT P
EC 1470 IF BIG$(B,B)="*" AND DLT=2 THEN GOSUB 880:POSITION 13,20:? "File Locked ":GOSUB 2170:GOTO 470
TL 1475 IF BIG$(B,B)="*" AND LCK=2 THEN GOSUB 880:POSITION 13,20:? "File Locked ":GOSUB 2170:GOTO 470
ZQ 1477 IF LCK=2 THEN RETURN
ZH 1480 IF P<=13 THEN X=4:Y=P+3
QV 1490 IF P>13 THEN X=22:Y=P-10
SI 1500 IF DLT=1 THEN POSITION X,Y:? "              ":DLT=0:GOTO 1540
IM 1510 IF UNL=1 THEN POSITION X-1,Y:? " ":BIG$(B,B)=" ":UNL=0:RETURN
QN 1520 IF LCK=1 THEN POSITION X-1,Y:? "*":BIG$(B,B)="*":LCK=0:RETURN
WH 1530 POSITION X,Y:? NM2$
DV 1540 BIG$(B+2,B+12)=T$(3,13)
AY 1550 RETURN
BP 1560 ? "K":REM AUTORUN.SYS FILE
ZM 1570 POSITION 5,1:? "                              "
CN 1580 POSITION 5,2:? "  Custom AUTORUN.SYS Program  "
PT 1590 POSITION 5,3:? " for BASIC programs on a DISK "
NO 1600 POSITION 5,4:? "                              ":? :? :? :?
GO 1610 POSITION 5,5:? "          by  Ata atun          ":? :? :? :?
PC 1620 POSITION 5,6:? "                              ":? :? :? :?
WW 1630 ? "Remove the D:OTORUN.CUS disk and":? "Q"
CW 1640 ? "insert the *** DISK *** you wish":? "Q"
IA 1650 ? "to have the AUTORUN.SYS on.":? "Q"
LY 1660 POSITION 7,22:? " HIT ANY KEY TO CONTINUE ":GET #3,A
IZ 1670 ? "K":POSITION 8,0:? " *** INSTRUCTIONS *** ":?
BJ 1680 ? "You must Input the entry command to be performed by the AUTORUN.SYS ,"
HM 1690 ? "but not more than 106 characters long.":? :?
TR 1700 ? "EXAMPLE ENTRY COMMAND :":? "————————————————————————"
ZC 1710 ? "?POKE 710,68:POKE 712,68:POKE 752,1:POSITION 16,10:? ";:? CHR$(34);:? " LOADING";:? CHR$(34);
QN 1720 ? ":RUN ";:? CHR$(34);:? "D:OTORUN.CUS";:? CHR$(34):? :?
ED 1730 ? "VALID ENTRY COMMAND :";:? "(you input now)";:? "————————————————————————"
OU 1740 POKE 752,0
DK 1750 INPUT A1$
UV 1760 OPEN #4,8,0,"D:AUTORUN.SYS"
KI 1770 PUT #4,255:PUT #4,255
RT 1780 PUT #4,0:PUT #4,6
YE 1790 L=123+LEN(A1$)-1
PI 1800 PUT #4,L
AE 1810 PUT #4,6:RESTORE 2000
QE 1820 FOR I=1 TO 123
RT 1830 READ D
JE 1840 IF I=64 THEN PUT #4,LEN(A1$)-1:GOTO 1860
LX 1850 PUT #4,D
FX 1860 NEXT I
TO 1870 FOR I=LEN(A1$) TO 1 STEP -1
WG 1880 PUT #4,ASC(A1$(I,I))
GG 1890 NEXT I
JN 1900 PUT #4,255
JQ 1910 PUT #4,255
IS 1920 PUT #4,226
CT 1930 PUT #4,2
JN 1940 PUT #4,227
CZ 1950 PUT #4,2
CC 1960 PUT #4,0
FF 1970 PUT #4,6
PM 1980 CLOSE #4
CW 1990 FOR DLY=1 TO 200:NEXT DLY:RUN
FN 2000 DATA 162,0,189,26,3,201,69,240,5,232
TU 2010 DATA 232,232,208,244,232,142,105,6,189,26
LT 2020 DATA 3,133,205,169,107,157,26,3,232,189
ND 2030 DATA 26,3,133,206,169,6,157,26,3,160
DI 2040 DATA 0,162,16,177,205,153,107,6,200,202
FF 2050 DATA 208,247,169,67,141,111,6,169,6,141
RY 2060 DATA 112,6,169,10,141,106,6,96,172,106
GQ 2070 DATA 6,240,9,185,123,6,206,106,6,160
EJ 2080 DATA 1,96,138,72,174,105,6,165,205,157
KO 2090 DATA 26,3,232,165,206,157,26,3,104,170
YH 2100 DATA 169,155,160,1,96,0,0,0,0,0
ES 2110 DATA 0,0,0,0,0,0,0,0,0,76
AW 2120 DATA 0,0,0
VU 2130 REM FILE NAME CORRECTION
BD 2140 FOR X=1 TO 12:IF ASC(NM1$(X,X))<45 THEN POP :GOTO 2160
LQ 2150 NEXT X
AU 2160 RETURN
IS 2170 REM DELAY
PY 2180 FOR DLY=1 TO 100:NEXT DLY:RETURN
```

Books

ELECTRONIC COMPUTER PROJECTS

Compute! Publications

£8.95

Many of the 'old hands' at Atari computing came into the hobby several years ago when there was not much available in the way of peripherals and accessories and they often already had a background in electronics so that amongst several specialist interests was that of the 'hardware hacker' who built his own equipment. There has always been an interest in adding home made projects to computers but there has never been an easy guide for the electronics 'layman'. Until now, that is.

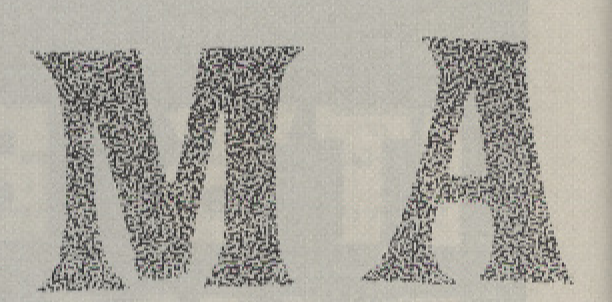
Electronic Computer Projects is the ideal introduction to hardware projects for any Atari owner even if he has never picked up a soldering iron before. The book takes you step by step through all the stages required to build your own joysticks, paddles, sensors, switches, burglar alarms and more. Staring from the very beginning it explains in detail different methods of building a circuit and how to use a soldering iron. Most of the projects in the book use a 'solderless breadboard' but you will need to do a little soldering. Fear not, a step by step guide is included for those who have never soldered before.

Introductory chapters explain how the computer and the joystick ports work before the first project, a simple logic probe, is tackled. Each project has a list of parts, including part numbers, which can be obtained from any Tandy store followed by detailed step by step instructions for construction. At various points special notes are included to explain the reason for certain actions in greater details. Where extra care is needed, that too is explained. Finally the procedure is given for testing your project. If a program is required to operate the hardware, a simple but effective listing is given. Every procedure is carefully explained and remarkably easy to follow.

The main projects include two types of simple joystick and importantly, now that they are no longer available, game paddles for those excellent games like PAGE 6's BREAKOUT that require them. What is more you can make these yourself for a fraction of the commercial cost. More advanced projects include a light pen, sensors that can detect movement or light and even a full scale burglar alarm. With these simple projects you can switch on lights, control model railways, time events, control robots and more.

The book is excellent value at £8.95 and, whilst aimed at beginners, will provide information to any owner who wishes to try his hand at interfacing his Atari to the outside world. You will have hours of fun with these projects and, what you may not realise, you can do so at very little cost. Most of the parts required will cost no more than a couple of pounds in total and some projects might cost only pennies! ●

MUNCHY



Munchy Madness is a single player all machine-code arcade style game for any 8-bit Atari with at least 32k RAM and will run from both disk and cassette.

Munchy Madness features a friendly little chap called a 'pucca', a little yellow creature who is very, very hungry! All the action takes place underground and on each level there are a number of juicy hearts, the recommended diet for any growing 'pucca'. Your object is to munch a certain number of hearts and then find the exit to progress to the next level.

Underground, however there are a number of complex mazes and walls restricting your movements and these dark labyrinths are filled with hundreds of loose rocks which, if you are careless, will come crashing down on a poor unsuspecting pucca. If a huge rock should fall, you may be lucky to escape with your life but could find yourself trapped forever!

CONTROLS

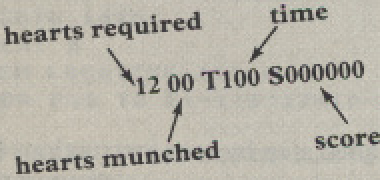
A joystick in port 1 controls the movement of your pucca. The rocks can be pushed both left and right by moving into them and they can also be lifted (assuming they don't squash you when they fall!).

The space bar can be used to pause and resume the game and ESC will terminate one life, a drastic action which is often the only way out of hopeless situations.

To begin the game, press the START key or use keys 1 – 4 to select the appropriate level. Note that once all four levels have been completed, the game will start again at the first level but at a faster speed. There are six different speeds in all.

GAME PLAY

You begin the game with five lives and the line at the bottom of the screen displays the number of lives which you have left. The line above this displays the following information



For every heart munched, your score is increased by ten points. A life is lost if you are either squashed by a boulder or the time limit expires. A countdown timer will bleep when you are almost out of time. When you have munched the required number of hearts an exit will appear somewhere on that level and passing through will bring you to the next level.

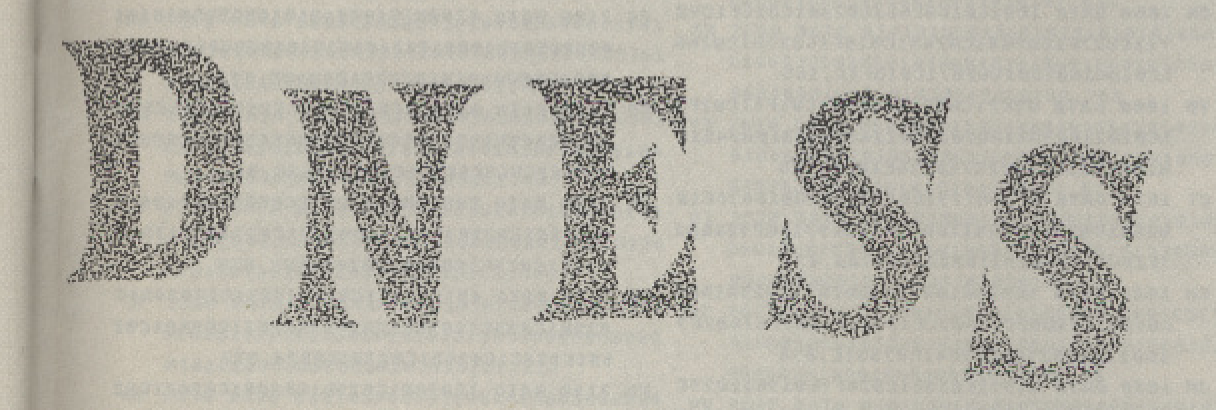
HIGH SCORES

When the game is over, and if your score is high enough, you will be able to enter your name on the high score screen. Moving the joystick left and right will move the cursor in the appropriate direction and moving the joystick up and down moves forwards and backwards through the alphabet. When your name is complete press the trigger and your name will be entered. On subsequent high scores, the name entered appears as a default to save you entering your name each time.

The source code for Munchy Madness is available upon request from PAGE 6 to anyone who sends a blank disk and return postage.

```
EH 0 REM ******************************
WQ 1 REM *        MUNCHY MADNESS      *
RP 2 REM *              by            *
QW 3 REM *          PAUL LAY          *
EB 4 REM * -------------------------- *
IY 5 REM *  PAGE 6 MAGAZINE - ENGLAND  *
EN 6 REM ******************************
CC 7 REM Object code loader based on an
       original published by ANALOG
EP 8 REM ******************************
FT 10 GRAPHICS 0:DIM CODE$(93),HEX(22):DA
   TA 0,1,2,3,4,5,6,7,8,9,0,0,0,0,0,0,0,1
   0,11,12,13,14,15
TJ 20 FOR I=0 TO 22:READ J:HEX(I)=J:NEXT
   I:? :? "MUNCHY MADNESS":OUTPUT=0:? :?
   "*** CHECKING DATA"
QR 30 TRAP 100:RESTORE 1000:FOR LINE=1000
    TO 3060 STEP 10:? "LINE ";LINE;:TOTAL
   =0
WG 40 READ CODE$:IF LINE<>PEEK(183)+256*P
   EEK(184) THEN ? " MISSING!":END
VG 50 IF LEN(CODE$)<>92 THEN 100
BG 60 FOR I=1 TO 46:BYTE=16*HEX(ASC(CODE$
   (2*I-1))-48)+HEX(ASC(CODE$(2*I))-48)
QS 70 IF OUTPUT THEN PUT #1,BYTE:NEXT I:R
   EAD CHKSUM:? :NEXT LINE:CLOSE #1:? :?
   "***FILE CREATED":END
VV 80 TOTAL=TOTAL+I*BYTE:NEXT I:IF TOTAL>
   1000 THEN TOTAL=TOTAL-1000*(INT(TOTAL/
   1000))
ZL 90 READ CHKSUM:IF TOTAL=CHKSUM THEN ?
   :NEXT LINE:GOTO 110
LD 100 ? " BAD DATA":END
BF 110 ? :? "***CREATE FILE":? "C..CASSET
   TE (BOOT)":? "D..DISK (BINARY LOAD)"
RA 120 K=PEEK(764):IF K<>18 AND K<>58 THE
   N 120
JC 130 POKE 764,255:IF K=58 THEN 160
PY 140 ? "READY CASSETTE AND PRESS RETURN
   ";:OPEN #1,8,128,"C:":? :RESTORE 190:F
   OR I=1 TO 14:READ J:PUT #1,J:NEXT I
JN 150 ? :? "***WRITING FILE":OUTPUT=1:GO
   TO 30
WA 160 ? "INSERT DISK WITH DOS, PRESS RET
   URN";
HV 170 IF PEEK(764)<>12 THEN 170
WU 180 POKE 764,255:OPEN #1,8,0,"D:AUTORU
   N.SYS":? :RESTORE 200:FOR I=1 TO 6:REA
   D J:PUT #1,J:NEXT I:GOTO 150
MN 190 DATA 0,75,242,31,0,0,169,60,141,2,
```





by Paul Lay

```
   211,76,208,32
HR 200 DATA 255,255,0,32,43,69
QS 1000 DATA 0000000000000000BA665BAD57B5
   DD2A0066FFFF7E3C18001C7EF7BBBFDF7E3800
   0000000000000000FB9FBFF9FB9F,277
TA 1010 DATA BFF9DD007700DD007700FFFFFFFF
   FFFFFFFF007E7E7E7E7E0000003C3C3C00
   00000000181800000000000000,323
EY 1020 DATA 000000007CEEEEEEEEEE7C0038F8
   38383838FE007CEE0E7CE0EEFE007CEE0E3C0E
   EE7C001C3C6CCCCCFE0C00FEE0,964
UB 1030 DATA 7C0E0EEE7C0078E0FCEEEEEE7C00
   FE0E0E1C387070007CEEEE7CEEEE7C007CEEEE
   EE3E061C007CEEE07C0EEE7C00,218
GE 1040 DATA FEBA3838383838003C76FCF8F8FC
   7E3C000000000000000000A9FF8D4402A90085D6
   8D0ED28D0ED4A91A8D0802A928,594
MH 1050 DATA 8D0902A9408D0ED220AA28A9D8A2
   039D0E28CA10FAA9CCA2059DFF27CA10FAA200
   9A20C022205E26201721206426,275
YD 1060 DATA 4C0B21488A489848AD2228C91CD0
   034C6921C921D00320232820CC21204522E6DD
   A5DDCDE828D012A9FF85DD206A,429
IW 1070 DATA 26A5F7D022A5FCD00C2003242008
   2968A868AA686020002920EE2820FF29A2009A
   209F224C0B2120002920EE28A5,340
OP 1080 DATA F038E92985CBA5F1E90085CCA947
   A204A00091CBC8C003D0F9A02891CBC8C02BD0
   F9A05091CBC8C053D0F9488A48,539
PN 1090 DATA A20820DA29CAD0FA68AA68186901
   CA10D1200029A9FF8D2228A203BD0E28D006CA
   10F84CEE20A9009D0E284C0521,821
QY 1100 DATA E6DAA5DACDE928D03FA90085DAA2
   02BDFA27C9CCD006CA10F64C6921A202BDFA27
   38E901C9CCB00AA9D59DFA27CA,800
PD 1110 DATA 10EE30039DFA27ADFA27C9CCD00C
   ADFB27C9CCD005A9048D7629603C7EDBFFFFFF
   7E3C3C7EDBFF81E77E3C3C7EDB,340
SL 1120 DATA FF81C3663C3C7EDBFF81C3663C3C
   7EDBFF81E77E3C3C7EDBFFFFFF7E3CE6EFA5EF
   C905D049A90085EFA207BD9722,221
TM 1130 DATA 5DC8209DC820CA10F4AC2820A200
   BD29209D2820E8E007D0F58C2F20E6EEA5EEC9
   06D004A90085EE0A0A0A186915,710
YS 1140 DATA 85CBA922690085CCA007B1CB9920
   208810F8607EDBDBFFFFDBDB7EE6FFA5FFC904
   D015A90085FFADE828F00CCEE8,355
MY 1150 DATA 28ADE92838E9088DE92820C02260
   20002920EE28205E26A9008D00D4A9FF85CBA9
   1B85CCA202A5CC9DC427A5CB9D,685
IK 1160 DATA C32718692885CBA5CC690085CCE8
   E8E8E029D0E4A9208D09D4A9C38D02D4A9278D
   03D4A9088D04D4A9008D05D4A9,735
MB 1170 DATA 0085D985DA85DD85DF85E085E585
   E685EE85EF85F385F585F685F785F985FCA6FF
   BD222F85CBBD262F85CCA20020,729
IL 1180 DATA EB239D16D09D8828E8E005D0F220
   EB2385E120EB2385E220EB2385F020EB2385F1
   20EB238DF32720EB238DF42720,246
QL 1190 DATA EB238DFA2720EB238DFB2720EB23
   8DFC2720EB2385D720EB2385D820EB2385F2AA
   A9009D164520EB239D164620EB,817
MV 1200 DATA 239D164720EB239D1648CAE0FFD0
   E4A90085CDA91C85CEA200A00020EB2391CDC8
   C028D0F6A5CD18692885CDA5CE,702
JR 1210 DATA 690085CEE8E018D0E2A900A00091
   CDC8C028D0F9A9CC8DF6278DF727205E26A922
   8D00D46084FDA000B1CB48A5CB,926
UT 1220 DATA 18690185CBA5CC690085CC68A4FD
   60A5F505F6C902D00AA90085F585F6A5F31039
   A90085DCAD00D3290F85F3C90E,377
JA 1230 DATA D013A5F038E92885CBA5F1E90085
   CCA200A0FFD04DC90DD013A5F018692885CBA5
   F1690085CCA200A001D036C90B,935
GJ 1240 DATA D013A5F038E90185CBA5F1E90085
   CCA2FFA000101FC907D013A5F018690185CBA5
   F1690085CCA201A0001008A900,810
MB 1250 DATA 85E385E4103586E384E4A000B1CB
   C9D9D004E6FC100AC983D004202D2538B0DEA9
   0085F585F6A9C491CBA90091F0,45
QQ 1260 DATA A5CB85F0A5CC85F1A9058D7329A5
   DCD00485F585F6A5E11865E385E1A5E21865E4
   85E2A5F9D059A6E08A0A0A1865,694
RO 1270 DATA E085E3A5E138E5E3C90F100FC905
   1016E0013012208C25C6E010DEE00410072050A
   25E6E010D3A6DF8A0A1865DF85,926
FX 1280 DATA E4A5E238E5E4C909100FC9031016
   E001301220BE25C6DF10B2E004100720F525E6
   DF10A760A5F3C90BD011E6DCA9,646
GM 1290 DATA 0085F6E6F5A5F5C902D018E6E560
   C907D011E6DCA90085F5E6F6A5F6C902D003E6
   E66060E6F9A90185DEA005A207,372
GD 1300 DATA 205E268E04D4201721206426CAE0
   00D0EF205E26A9088D04D420282620172120 64
   2688D0D9C6F960E6F9A90185DE,395
PS 1310 DATA A005A209205E268E04D420172120
   6426E8E010D0EF205E26A9088D04D420432620
   172120642688D0D9C6F960E6F9,438
IN 1320 DATA A92885DEA003205E26A90E8D05D4
   2043262017212064 26A20C205E268E05D42017
   21206426CACA10F02017212064,210
RZ 1330 DATA 2688D0D4C6F960E6F9A92885DEA0
   03A202205E268E05D42017212064 26E8E8E010
   D0EE205E26A9008D05D4202826,577
SJ 1340 DATA 20172120642688D0D8C6F960A202
   BDC3271865DE9DC327BDC427690090DC427E8E8
   E8E029D0E860A202BDC32738E5,613
EE 1350 DATA DE9DC327BDC427E9009DC427E8E8
   E8E029D0E860AD0BD4D0FB60AD0BD4F0FB60A6
   F2BD1646D0034C242748BD1647,66
EK 1360 DATA 85CBBD164885CC68C902F00BA001
   B1CBC942F0054C5627A98385F8A029B1CBD003
   4C2D27C942F00FC983F00BC986,596
LB 1370 DATA F007C9C4D01B4C4D27A028B1CBD0
   06A000B1CBF026A02AB1CBD006A002B1CBF066
   A5F8C983D048A5E5F030A002B1,404
RQ 1380 DATA CBC9C4D03CA00084E5B1CBD034A5
   F891CBA5CB38E9019D1647A5CCE9009D1648A0
   01A90091CBA9019D1645 1023A5,308
LI 1390 DATA E6F010A000B1CBC9C4D00884E6A0
   02B1CBF018BD1645F00AA9078D7429A9009D16
   45CAE0FFF0034C6C2660A5F891,749
KA 1400 DATA CB88981865CB9D1647A5CC69009D
   1648A001A90091CBA9019D164510D7BD1645F0
   D2E6F710D7BD1645D025208A27,55
LB 1410 DATA ADF627CDF327D013ADF727CDF427
   D00BA000A9D991D7A94F8D7729A9009D164610
   A4A029A94285F8E6F710A3A907,147
PI 1420 DATA 8D75298A48A204BDFF27186901C9
   D6900AA9CC9DFF27CA10EE30039DFF2768AAAD
   F727186901C9D69009A9CC8DF7,737
NM 1430 DATA 27EEF627608DF727607077000077
   000077000077000077000077000077000077 00
   0077000077000077000077 0000,30
PH 1440 DATA 57000046F2270641C32700CCCC42
   CCCC0097CCCCCC0096CCCCCCCCCCCC00000000
   000000000000000000000000000,710
LO 1450 DATA 00000000AD09D28D22286840FF20
   0029205E26A98D8D02D4A9288D03D4A9DA8D16
   D0A9E08D09D4A9FF8D22282064,736
KJ 1460 DATA 26AD2228C921F00BAD0AD229F48D
   1AD04C4528AD0BD4F00BAD0AD229F48D1AD04C
   5728A9C38D02D4A9278D03D4AD,885
YR 1470 DATA 88288D16D0AD8C288D1AD0A9208D
   09D4A9FF8D22286000000000000070707047962 8
   418D2800000000000000000302135,326
EU 1480 DATA 33252400000000000000000205A2AA9
   FF8D2228AD2228A203DDEA28F00CCA10F8AD1F
   D0C906D0ECA20086FFA9058DE8,4
BH 1490 DATA 28A9328DE928205E26A9008D0ED4
   20002920EE28A9FF8D22286005321F1E1A18A9
   FF8D73298D74298D75298D7629,263
RJ 1500 DATA 8D772960A900A2089D00D2CA10FA
   60AE7329300FBD78298D00D2BD7E298D01D2CE
   7329AE7429300FBD84298D02D2,849
MD 1510 DATA BD8C298D03D2CE7429AE7529300F
   BD94298D00D2BD9C298D01D2CE7529AE762930
   0FBDA4298D04D2BDA9298D05D2,334
LM 1520 DATA CE7629AD77293012290FAABDAE29
   8D06D2BDBE298D07D2CE772960FFFFFFFFFF00
   604030384000C6A8AAA8A600F0,708
ZQ 1530 DATA D0A00807050400088E8E8A888886
   00B0AEACA8A0907000A8AAACAEACAAA8002028
   201800A4A6A8AA000078706860,272
ES 1540 DATA 5850484038302820181000AEAEAC
   ACAAAAA8A8A6A6A4A4A2A2A2FAC8FA96C896C8
   6496649650488A48205E2620EA,782
ZX 1550 DATA 2920642668AA6860A206AD0AD29D
   00D2AD0AD229EF9D01D2CACA10EE60A9AFA207
   9D00D2CACA10F9A200BD4A2A8D,14
DL 1560 DATA 482ABD522A8D492A20242AE8E008
   D0EC20002960488A48AD482AA2009D00D21869
   01E8E8E008D0F4AE492A205E26,291
```

```
RY 1570 DATA 206426CA10F768AA68600000E0B0
   E0C0E0B0E0F0060C060C060C060C205E26A900
   8D00D4A2FFA9019D001BAD0AD2,711
UY 1580 DATA 9D001ACAD0F2A9E08D09D4A204A9
   008D1AD0A9188D07D4A9018D1DD0A90C8D12D0
   A9208D02D4A92B8D03D4A9D08D,801
SU 1590 DATA 0002A92C8D0102A9008D08D2A903
   8D0FD2A9AE8D01D28D03D2A9648D04D2A9008D
   05D28DE82D8DE92D8DEA2DA904,977
VK 1600 DATA 8DEB2D8D04D4A94A8D3C2BA92C8D
   3D2BA9808D0ED4205E26A9368D00D4A5D6F034
   A99D85CBA92B85CCA200A000B1,135
RR 1610 DATA CB1869BCD9FF27901AD005C8C006
   D0EFA5CB18691485CBA5CC690085CCE8E005D0
   DB6020EC2D60E6D66070707070,125
YO 1620 DATA 70B046412B70073006307007706
   0606060670020002005 24A2C41202B00003021
   272500160030322533252E3433,4
HC 1630 DATA 000000000000006D756E6368790060
   61646E6573730000000048717565737400666F
   7200686561727473490000000,406
RN 1640 DATA 00B4AFA4A1B987B300A2A5B3B400
   0000000000F0E1E7E500D600000000010101110
   101000000000F0E1E7E500D600,136
WM 1650 DATA 000000101010151010000000000F0
   E1E7E500D600000000010101012151000000000
   F0E1E7E500D6000000000101010,117
QX 1660 DATA 11101000000000F0E1E7E500D600
   000000101010101510000000000000000000000
   0000296E0034686500307562 6C,196
HZ 1670 DATA 696300246F6D61696E0000000000
   00000000000000000000000000000030726F6772
   616D6D6564006279003061756C,496
QE 1680 DATA 002C617900000000000000000000
   00000000333421323400746F00626567696E00
   000000000110C120C130C140066,397
ZU 1690 DATA 6F72006C6576656C730000000000
   3330212325222132007 46F00706175736500000
   000000253323 00746F00746572,746
QF 1700 DATA 6D696E6174650100000000003334
   21323400746F00626567696E000000000000110C
   120C130C1400666F72006C6576,664
MN 1710 DATA 656C730000000000003330212325 22
   488A489848A280A4D5BD001A8D0AD48D04D08C
   18D0C88A0A8D19D01869808D16,790
GP 1720 DATA D009088D12D0CAD0E08E04D0A002
   B9E22D8D17D0B9E52DA2078D0AD48D18D038E9
   01CA10F48D0AD48810E3EEEA2D,253
GO 1730 DATA ADEA2DC905D032A9008DEA2DAEE8
   2DBDCE298D00D21869018D02D2ACE92D8C08D2
   EEE92DC007D011A0008CE92DEE,114
VD 1740 DATA E82DE00BD005A2008EE82DA200BD
   011AA8C9789006C9889003C8C888989D001AE8
   E03FD0E8AD0AD28D3F1AA280BD,595
YZ 1750 DATA FF19A8C9789006C9889003C8C888
   989D001ACAE040D0E8AD0AD28D401AE6D5A5D5
   8D17D0CEEB2DF008ADEB2D8D04,391
QV 1760 DATA D4D031A9048DEB2D8D04D4AD3C2B
   1869018D3C2BAD3D2B69008D3D2BAD3C2BC9A0
   D011AD3D2BC92CD00AA94A8D3C,840
XY 1770 DATA 2BA92C8D3D2B68A868AA6840000E
   0EBA1A9A0000000086E3A9CD85CBA92B85CCA9
   0438E5E3AAF026A5CB18691485,675
PV 1780 DATA CDA5CC690085CEA013B1CB91CD88
   10F9A5CB38E91485CBA5CCE90085CCCA10D8A9
   9285CBA92B85CCA5E30A0A4818,469
OG 1790 DATA 65CB85CBA5CC690085CC680A0A18
   65CB85CBA5CC690085CCA008B9192FAABDF52E
   91CB88D0F4A5CB18690B85CDA5,93
MN 1800 DATA CC690085CEA005B9FF2738E9BC91
   CD8810F5A5CB18690185CDA5CC690085CEA000
   20E22EA97F91CD20E22EB91A2F,380
LP 1810 DATA AABDF52E91CDAD10D0F043AD00D3
   290FC907D009C8C00830DAA00010D6C90BD007
   8810CFA00710CBC90DD00CB91A,958
PC 1820 DATA 2F38E9011014A9241010C90ED0B7
   B91A2F186901C9253002A900991A2F4C812EAD
   10D0F0FB60205E262064 26205E,58
ND 1830 DATA 26206426205E262064266000E1E2
   E3E4E5E6E7E8E9EAEBECEDEEEFF0F1F2F3F4F5
   F6F7F8F9FAD0D1D2D3D4D5D6D7,13
QA 1840 DATA D8D900000000000000002A1E6C6F
   2F34393EF63608DAF202037A1CCDCECDCCCC97
   1F6002371C01381C02411C0251,25
GH 1850 DATA 1C02601C02661C026B1C026E1C02
   711C027F1C02841C02881C018F1C02901C02A6
   1C01A81C02B01C02B71C01BF1C,165
YD 1860 DATA 02C21C02C31C02E81C01F11C02F9
   1C02021D02031D02071D02141D02431D02451D
   01461D02511D02521D026E1D02,115
CT 1870 DATA 6F1D02791D017A1D02801D02861D
   02881D028B1D02911D02961D01971D02981D02
   9E1D019F1D02A31D02A41D02AA,471
CH 1880 DATA 1D02AB1D02AC1D02B51D02BB1D02
   C01D02C21D02C61D02CE1D02EE1D02F61D02F9
   1D02311E02361E02541E02551E,898
JM 1890 DATA 01591E028E1E028F1E01961E029C
   1E029D1E019E1E02A51E02A91E02B51E02B61E
   01B71E02B81E02C31E02C41E02,461
WQ 1900 DATA C51E02C91E02CB1E01CD1E02D81E
   02DC1E02DF1E02E01E02F41E02FA1E02131F02
   1A1F02651F028D1F028E1F0293,34
XZ 1910 DATA 1F02941FC5C5C5C5C5C5C5C5C5C5
   C5C5C5C5C5C5C5C5C5C5C5C5C5C5C5C5C5C5C5
   C5C5C5C5C5C5C5C5C5C5C501,574
TX 1920 DATA 010101000186000100010100 0086
   8342000000000000000000083000101010000000 0
   00010101C5C5018301010101 00,962
DF 1930 DATA 0000000000000000001830100000 1
   000830101010183010183000083000001 01C5C5
   00C4010001000008301010101 83,362
WT 1940 DATA 000101830100000101014283000 1
   0101010101008686000001C5C5010001010000
   83014201010100000001830100,106
ZR 1950 DATA 0001010183010000000101014200
   00838300 00C5C50100000100000100010001 01
   00000001860000000001010101,438
TK 1960 DATA 0001000000001018301010100 00C5
   C5014201000000000000083000000000101010 1
   83830000000830101000000000 0,592
GE 1970 DATA 010101010183 00C5C586868686 86
   8686868686868686868686868686868686868686
   86868686868686860000010101,629
IA 1980 DATA 01C5C5000000083000834200000000
   000000000101838300000000000010100010101
   0101010100010101C5C5010000,618
RO 1990 DATA 00010183830000000000000010101
   834200010000000830101010100830183010083
   0001C5C5018300000001834283,589
RB 2000 DATA 000000000083420101018383010 0
   010100838383010101010101010183C5C50101
   0083000101018301830101018 3,516
CG 2010 DATA 0101010001010083000101010101
   0101010100010101 01C5C5000100010000 0101
   0101010101018300010101010 1,730
HT 2020 DATA 0183010083000101000100000100
   000100C5C50101010000000000000001000101 01
   01010101010100008600010101,434
SA 2030 DATA 010000000010000000000100C5C501
   830000000008300000000000000000000000000
   0000868600000000010101010 0,496
XN 2040 DATA 00010183 83C5C501420101000086
   868686868686868686868686868686868686868 6
   86868686868686868686 8686C5,926
VK 2050 DATA C5000101010101010101010000 8601
   01838301010000000864201000000000083834201
   00010101 0183C5C500830100 01,142
AX 2060 DATA 00010100000000018383428301 01
   000000010001000008383830100018300830142
   C5C50001010001010001830001,23
KX 2070 DATA 018301018383010101010101000001
   0101010101010100010101 8301C5C500018301
   0000000001000101010101010 1,225
WL 2080 DATA 010101010101000000018301010 1
   010101830101 01C5C5000101010001868600 01
   0000001000000000101010101 01,453
QP 2090 DATA 00000001010100000101010100 01
   00C5C50101000000100010101010100000000 01
   0100086010001010101010000 01,940
EC 2100 DATA 83000101000101010 0C5C5010101
   00000000010001010101010100008686000000
   000000000101018383010101 00,523
PQ 2110 DATA 838300C5C5C5C5C5C5C5C5C5C5C5
   C5C5C5C5C5C5C5C5C5C5C5C5C5C5C5C5C5C5C5
   C5C5C5C5C5C5C5C5C5C5B636,915
UU 2120 DATA F8DA000101291CCDCDCECED10A1D
   7E022A1C022E1C02321C02331C02341C01351C
   023C1C023F1C01431C02441C02,858
RO 2130 DATA 451C02461C024B1C014C1C024D1C
   025B1C025C1C025D1C02621C02631C02681C02
   6B1C026C1C026D1C02731C0274,977
PM 2140 DATA 1C028B1C029D1C02A01C02A21C02
   A51C02AC1C02AD1C02B91C02BC1C02C81C02CC
   1C02CE1C02D31C02E01C02E61C,816
SA 2150 DATA 01F01C02F31C02FC1C02431D024B
   1D02571D02591D015A1D025E1D025F1D01601D
   02631D02651D026A1D01731D02,884
IE 2160 DATA 741D02811D02821D02841D02871D
   02881D028A1D018B1D028C1D028D1D02911D01
   921D02931D02AA1D02B01D02B3,92
LL 2170 DATA 1D02B41D02BA1D02EB1D02EF1D02
   F31D02FA1D02091E020B1E02251E02311E023F
   1E02531E02541E027D1E02911E,724
RD 2180 DATA 02951E01981E029A1E029E1E02B2
   1E02B41E02B91E02BA1E02BF1E02C01E02C21E
   02C31E02C61E02C81E02DC1E02,77
JM 2190 DATA E01E02E61E02E71E02EA1E02F91E
   021A1F021B1F02201F02221F02361F02431F02
   441F02491F024F1F02511F0252,213
ZS 2200 DATA 1F02651F026B1F026C1F01701F01
   791F02811F02911F02921F02931FC5C5C5C5C5
   C5C5C5C5C5C5C5C5C5C5C5C5C5,613
BC 2210 DATA C5C5C5C5C5C5C5C5C5C5C5C5C5C5
   C5C5C5C5C5C5C5C5C5C401830101018386 0101
   838383428601010101018301 01,89
NW 2220 DATA 830101864283838386010101834 2
   83C5C5000101010101018601010183838386 01
   0101838386010101830186838 3,962
UV 2230 DATA 83018601010183830 1C5C5000000
   00000000000000010101018601010101838601
   00010101000101010100010100,94
OD 2240 DATA 010183C5C58301830101830186 01
   00000083830000000001018601010101838601
   830101860101010100 01C5C583,357
QT 2250 DATA 010101830183860100018301018 6
   010100010186010101830186010101838601 01
   01010101C5C5420101830101 01,121
ZR 2260 DATA 860100010183018601010001018 6
   010101010186010101018601010101010 1C5C5
   868686868686868686 00868686,29
KD 2270 DATA 8686868600868686860086868686
   868600868686868686868686C5C501010183018 6
   0101010086830101010101 0001,867
MQ 2280 DATA 010186018301834286010101838342
   8601830183C5C5010183010186010101008642
   830101010100010101860101 01,809
NY 2290 DATA 8383868301010183838683428383C5
   C50183428301860100000086010101868686 00
   86868686010101018386010101,916
JF 2300 DATA 01838601838301C5C50101830101
   86010001018601010186010100010101860101
   000101860101000101860101 01,554
TT 2310 DATA 01C5C50101010101860100010186
   830101868301000183018601000101838601 01
   010101860101 01C5C5018301,644
```

```
MC 2320 DATA 830186010001018601010101860101
   00010101860101010101018601830101018601 01
   0101C5C501830101018601 0001,787
KR 2330 DATA 018601010101868301000000008601
   0101010100010101010186018383 01C5C50086
   868686868600868686008686 86,683
RI 2340 DATA 868686068600868686868686868686
   8686860086868686 83C5C501010101010101 00
   860101010101010101830186 00,126
RZ 2350 DATA 830101428683010101838601 0101
   010101C5C50101010001010100860183018301
   010001838386000101838386 83,802
OA 2360 DATA 830101838683010100 0101C5C501
   0101010101010086010101830101018301 0186
   000183830186830101010186 01,469
DY 2370 DATA 0101010101C5C501830101000101
   00868686868686868686868686860001010101 86
   0101000101860101838301 01C5,664
JF 2380 DATA C58301830001010100860101 0101
   01010101010101860001830101868686868600 86
   0101018383 01C5C501830101 01,122
DE 2390 DATA 010183000838300000000000000000
   000001010101860101010183010101010101838301
   C5C542010101010101010101864201,656
RB 2400 DATA 010101010101830186010101 0101
   000101010101010101838383 0101C5C5C5C5C5
   C5C5C5C5C5C5C5C5C5C5C5C5,321
ME 2410 DATA C5C5C5C5C5C5C5C5C5C5C5C5C5C5
   C5C5C5C5C5C5C5C5E636A8DAE20101291CCDD0
   CED3D1711F6502451C017A1C02,35
SS 2420 DATA CA1C02D01C02D11C01D21C02D81C
   02DC1C02DE1C01E11C02E21C02E31C02E81C02
   E91C01F21C02F71C02F81C02F9,479
YP 2430 DATA 1C02FA1C02001D01011D01051D02
   091D020A1D010C1D020F1D02101D02111D021F
   1D02201D02211D02291D02341D,762
GW 2440 DATA 02371D02391D02481D025F1D0260
   1D02611D02721D02801D02851D02871D02881D
   02941D02991D029A1D02A01D02,498
PN 2450 DATA A11D02A51D02A81D02A91D02AC1D
   01AF1D02B01D02B11D02BC1D02BD1D01C11D01
   C81D01D01D02D91D01E41D02E5,19
EJ 2460 DATA 1D021B1E021D1E02201E02221E02
   251E02281E02381E013A1E02421E02431E0148
   1E014A1E025F1E02601E02611E,607
ZZ 2470 DATA 02621E02751E02861E02871E028A
   1E02921E02961E02AD1E02AE1E02B51E02C41E
   02C71E02D51E02DC1E01DD1E02,88
XY 2480 DATA E11E02E51E02F11E02091F020A1F
   02181F02321F01331FC5C5C5C5C5C5C5C5C5C5
   C5C5C5C5C5C5C5C5C5C5C5C5,321
FO 2490 DATA C5C5C5C5C5C5C5C5C5C5C5C5C5C5
   C5C5C5C5C40101010101010101010101010101
   01010101010101010101010101,302
AO 2500 DATA 01830101010101010101C5C50186
   868686868686018686868686868686868686 86
   8686868686868686860186868686,140
CK 2510 DATA 86868601C5C50186420101010101
   01010101018601010101010101010101010101
   010101010101010101018601C5C5,899
NS 2520 DATA 018686868686868686868686860186
   01868686868686868686868686868686868686
   868601868601C5C501868386 0101,447
JJ 2530 DATA 010183834286018601868301 0101
   830183010142838301018601838386018601C5
   C501864286010101838383 8386,560
IE 2540 DATA 018601868342010101420101 0183
   830142018683838386018601C5C50186018600
   010183838301860186 01860183,706
PT 2550 DATA 010101010100010101018301 8683
   018386018601C5C5018601860101010183 0101
   860186018601018686868686 86,107
YQ 2560 DATA 868686860101868383838601 8601
   C5C50186018601010100010183860186018601
   0101010101010183010101 0183,940
OP 2570 DATA 868383018601860 1C5C501860186
   830101010183838601860186838301010183 01
   018383010183018642838386 01,586
CP 2580 DATA 8601C5C50186018683830101 0142
   01860186018642010101010101014201000101
   0186010183860186 01C5C50186,634
KG 2590 DATA 018642830100010101860186 0186
   86868686860101868686868601018601010186
   018601C5C50186018601010101,616
HN 2600 DATA 010101860186010101010101838683
   01868386838601838601830186018601C5C501
   860186010101018301428601 86,752
YI 2610 DATA 868686018383860101864286 4286
   010186010101860186 01C5C50186018601 0001
   8383838386010101018601 0101,612
QI 2620 DATA 860101860186018601838601 0100
   86018601C5C5018601860101838301 01838686
   868601860183018601838601 86,381
DP 2630 DATA 018601018601010186018601C5C5
   01860186018383010101018601838601860101
   00860101860186018683018683,30
PV 2640 DATA 01018601 8601C5C50186018601 83
   01010101018683428601868301018683018601
   8601860101860101838601 8601,89
VL 2650 DATA C5C501860186868686868686860186
   86018601868383018601018601860186010086
   0183018601 8601C5C501860101,921
OA 2660 DATA 010101010186010101010101 8601
   83428601010101010101010186010101010186
   01C5C5018686868686868686 0186,44
GI 2670 DATA 868686868686868686868686868686
   8686868686018686868686868601C5C5010101
   01010101010101010101010101,259
HO 2680 DATA 010101010101010101010101010101
   01010101010101 01C5C5C5C5C5C5C5C5C5C5C5
   C5C5C5C5C5C5C5C5C5C5C5C5,369
MU 2690 DATA C5C5C5C5C5C5C5C5C5C5C5C5C5C5
   C5C5C5483618DA0002012A1CD3CCCFCED1291C
   F1012C1C022D1C02331C02371C,755
NH 2700 DATA 013E1C013F1C01411C01421C0143
   1C02441C01451C02461C01471C01481C02491C
   024A1C014B1C024C1C014D1C02,628
RG 2710 DATA 521C02541C025A1C025B1C025F1C
   02641C02671C01691C016A1C016B1C016C1C01
   6D1C016E1C026F1C01701C0172,452
PW 2720 DATA 1C02731C01741C01751C027A1C02
   811C02821C01831C02871C02881C02891C028B
   1C028C1C01911C01921C01931C,697
KV 2730 DATA 02941C02951C01961C02971C0198
   1C01991C019A1C019B1C019C1C029D1C02AB1C
   02AE1C02AF1C02B41C02B61C01,169
UI 2740 DATA BA1C01BB1C01BC1C01BD1C01BF1C
   02C01C01C11C01C21C02C31C01C41C01C51C02
   C91C02DA1C02DE1C02E11C01E2,160
BB 2750 DATA 1C01E31C01E41C01E51C01E61C02
   E71C01E81C01E91C01EA1C01EB1C01EC1C02ED
   1C02F01C02F91C02FF1C02001D,450
QV 2760 DATA 02091D020A1D020B1D010C1D010D
   1D010E1D020F1D02101D01121D01131D01141D
   02151D02221D02271D022F1D01,752
GK 2770 DATA 311D01321D01331D01341D02351D
   01361D01371D01381D01391D013A1D013B1D02
   3C1D023D1D02471D024E1D0254,761
GK 2780 DATA 1D01591D025A1D015B1D015D1D02
   5E1D015F1D02601D02611D02621D01631D0164
   1D01651D026E1D026F1D02711D,255
ZX 2790 DATA 027A1D027F1D01811D01821D0283
   1D01841D01851D01861D01871D02881D01891D
   018A1D018B1D018D1D02921D02,267
UH 2800 DATA 941D02951D02961D02991D029A1D
   02A31D02A71D01A91D01AA1D01AB1D01AC1D02
   AD1D02AE1D02AF1D01B01D01B1,761
AW 2810 DATA 1D02B21D01B31D01B41D01B51D02
   B81D02C21D02CA1D02E91D02F61D02FA1D0217
   1E02241E02271E02311E023D1E,777
EQ 2820 DATA 02401E02421E024D1E024E1E0262
   1E02651E02661E026B1E026F1E027A1E02801E
   02841E02851E028A1E02921E02,350
GZ 2830 DATA A31E02A81E02AA1E02AD1E02AE1E
   02AF1E02B21E02B31E02B81E02C11E02CD1E02
   D61E02D71E02DB1E02DE1E02EA,867
YQ 2840 DATA 1E02FC1E02FF1E02031F02071F02
   0C1F020E1F020F1F02141F02181F02201F022D
   1F022E1F02321F02371F023D1F,712
OT 2850 DATA 02431F02551F025A1F026A1F016B
   1F02741F02761F02791FC5C5C5C5C5C5C5C5C5
   C5C5C5C5C5C5C5C5C5C5C5C5,434
UI 2860 DATA C5C5C5C5C5C5C5C5C5C5C5C5C5C5
   C5C5C5C5C501C401864283010101010101838601
   018301010101018642428642 42,866
PK 2870 DATA 428342834242838342834 2C5C501
   00838683010101010183838600018300010101
   838601838642424242424283 42,457
DK 2880 DATA 8642834242C5C50101838601 0101
   01018383428601018383830183838601018642
   4242838342834242424242 83C5,874
HB 2890 DATA C5010101860001010101010183 86
   01838301010101838683018686424242428642
   834242834242C5C501830186 01,238
IE 2900 DATA 010101010101018601010101 8683
   01018683018683424242424283424242424283
   C5C583010186010100018683 01,86
RJ 2910 DATA 008600018383860100018601 0186
   ,838383424242838386424242 83C5C501010186
   0101010186018300860101 8301,209
PN 2920 DATA 860101018601838642424242 8342
   4242424242838 3C5C500010186010101838601
   0101860183010186010183 8600,551
IJ 2930 DATA 018642834286428342838383 4242
   42C5C5010101860101838386830101860101 01
   01868301018601838642428342,807
SU 2940 DATA 424242834242428642C5C501 0183
   86838383018683830186010101018601830186
   0183864242424283838342 4283,582
MB 2950 DATA 424242C5C583010186010101 0186
   01830186010101018683010186010186868686
   86868601868686868686C5C501,804
UG 2960 DATA 000186010100018683010186 0101
   00018601010186830101018301010101010101
   00010100C5C50101868601 0101,908
HM 2970 DATA 018601010086010183018601 8601
   86010186010101830101830101010101 01C5C5
   01830186000101018601010186,878
YL 2980 DATA 830101838683010186010186 0186
   00018383010101010186 01C5C50101018601 01
   000186018301868383010186 01,858
UE 2990 DATA 830186018386010186010101 0101
   0183010101C5C583000186838301018601 8301
   86010101018683010186010186,319
KS 3000 DATA 010101010101868686018301 01C5
   C58301838601838383860183838601000 18386
   0100018601018683010100 0101,731
QI 3010 DATA 01010101010183C5C5010101 8601
   01838386010183860183010186010101860101
   860183010101010101010001 01,384
MZ 3020 DATA 01C5C5010186868301018386 0001
   83860101830186010183868383860001018301
   00018301000101 01C5C5830101,362
HP 3030 DATA 860100000186010101868383 0101
   86830101010101838601868686830101010101 83
   0101C5C586010101010101 0186,311
ED 3040 DATA 010101018301010186830100 0101
   01860101010001010101018342 0101C5C50101
   01018301830186830101010101,685
PU 3050 DATA 010186010101010101860101 0101
   010101010101010101C5C5C5C5C5C5C5C5C5C5
   C5C5C5C5C5C5C5C5C5C5C5C5,590
AY 3060 DATA C5C5C5C5C5C5C5C5C5C5C5C5C5C5
   C5C5C5C500000000000000000000000000000000
   0000000000000000E002E102D020,550
```

★



An event NOT to be missed!
Atari Christmas Show
Royal Horticultural Hall
Westminster, London SW1
Friday November 28 10am-6pm
Saturday November 29 10am-6pm
Sunday November 30 10am-4pm
The first ever Atari Show last spring was an outstanding success. From all over Britain Atari enthusiasts flocked to London to find out all they could about their favourite machine.
Soon the record-breaking Atari Show will be back – with three days devoted to the exciting developments in this expanding market. Make a note in your diary NOW to make sure you don't miss this great Christmas extravaganza!
★ All the latest software from publishers in both the UK and USA
★ New hardware releases from Atari and other major companies
★ Experts from Atari User and Atari ST User to answer your questions
★ Experience the fascinating world of computer communications
★ Everything on show from stocking fillers to complete Atari systems
Whether you're a new user or a seasoned addict, you'll find the show overflowing with ideas to help you expand your computing horizons!
Organised by Database Exhibitions
They'll all be there! Games consoles, 8 bit machines . . . the entire ST range!
Avoid the queues!
Get your ticket in advance and. . .
SAVE £1 A HEAD!
Advance ticket order
Please supply:
Adult tickets at £2 (save £1) .... £
Under-16s tickets at £1 (save £1) ...... £
TOTAL £
Cheque enclosed made payable to Database Publications Ltd.
Please debit my credit card account:
Access
Visa
Admission at door: £3 (adults), £2 (under 16s)
POST TO: Atari Christmas Show Tickets, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.
ATARI COMPUTER SHOW
Royal Horticultural Hall, Westminster, London SW1
November 28-30, 1986
Name
Address
Signed
PHONE ORDERS: Show Hotline: 061-456 8835
PRESTEL ORDERS: KEY *89, THEN 614568383
MICROLINK ORDERS: MAILBOX 72:MAG001
Please quote credit card number and full address + Ref. PAGE 6

SHORT REVIEWS



New Releases

Re-releases

Jim Short

looks at them all

SAVAGE POND
CLOAK OF DEATH
(both Bug Byte)
48K Cassette £2.99 each
1/2 Players
1/2 Joysticks/Keyboard

Bug Byte are a company who have been producing computer software almost since the dawn of time. In the early days they concentrated on machines like the Vic-20 (a steam-driven antique unit which is, thankfully, no longer with us) but now, in their infinite wisdom, they have gotten round to producing Atari software at long last. Slightly misleading in the case of SAVAGE POND though, as this is an old Starcade game and Bug Byte have acquired the rights to this game rather than produced it themselves.

In SAVAGE POND you control a tadpole, of all things, and your aim is to try and build up a healthy colony of frogs. Worms, dragonfly eggs and amoeba have to be eaten (not a diet I'd fancy!) in order to stay alive and continue along the path of evolution until, finally, you reach the serious business of frog-breeding. As the name implies, SAVAGE POND is far from friendly and hazards abound. Firstly there are vicious predators such as hydra, jellyfish and voracious dragonfly nymphs who regard a tadpole in much the same way as we regard a fat steak, spiders, waterfleas, bloodworms and other skin-crawling nasties. And then there's Mother Nature's deadliest enemy (us you fool!) equipped with a nice drum of radio-active waste to pollute the water – you've guessed it...... this pond's sighted next door to Sellafield!! After making a token attempt to battle through all this the best advice I can give is, if you believe in reincarnation, then don't come back as a tadpole!

SAVAGE POND has been available for as long as I can remember but there are possibly many new Atari owners who have never heard of it, plus one or two of the older ones? It deserves more recognition if only because it oozes originality – there's not another game quite like it. SAVAGE POND is ageless in terms of computer software. It doesn't fit into any set category (platform, shoot 'em up,



adventure etc.) so it can never become unfashionable. Under Bug Byte it retails at a paltry £2.99. Believe me, it'll be the best three quid you'll ever spend!

Also received for review – CLOAK OF DEATH, which is a graphical adventure written entirely in BASIC. The scenario is a familiar one. You've downed too many pints at the local tavern and, full of Dutch courage (not to mention Danish lager!), you agree to spend the night in an old house which has been empty for 30 years. The door slams shut behind you and, try as you might, you can't open it again. And so the scene is set.......

The program recognises 67 verbs and 94 nouns and, as adventure's go, it is reasonable enough with lots of head-scratching puzzles to solve. The graphics can be turned off for those who regard them as sacrilege, but yours truly preferred them on as they add some extra interest to the game.

Lots of very good text adventures are available as magazine listings – including Page 6's own CASTLE MORGUE – and I feel most people would think twice about forking out money for an adventure written in BASIC, despite the addition of the graphics. At least the price is right and at only £2.99 it must be worth considering.

MERCENARY – THE 2ND CITY
Novagen
64K/48K Disk £9.95
64K/48K Cassette £5.95
1 Player
1 Joystick/Keyboard

The initial release of MERCENARY brought with it the promise of an immediate follow-up. Well, Novagen have been true to their word and MERCENARY-THE 2ND CITY has arrived. It takes the form of a data-set and can only be played by the owners of the original MERCENARY package.

You must first boot the main program as normal and then load THE 2ND CITY in much the same way as you would a 'Saved Game'. You will gather from this that THE 2ND CITY is useless on it's own and ,something to watch, the disk and cassette versions are not compatible with one another. The first thing you will notice once loaded is that the planet has changed colour from green to red with a harsh crimson skyline to match. At first it's fairly difficult to find anything else different about this game as everything jogs along in exactly the same way as it did in MERCENARY I – same locations, same airstrip, same job offer, same buildings, same ship, same elevator, same hangar, same briefing-room, same message from the Palyars – and then, at long last, things start to get interesting! Pretty soon you will discover that the underground complex is not the same underground complex of old. This one's full of new and exciting surprises and is a whole lot tougher than it's counterpart in MERCENARY I. I'd like to be able to elaborate on that but I keep colliding with a mysterious alien which sends me spinning, as if through a time-warp, out into space and back to the start of the game again, minus a ship! Yes, something tells me that escape from THE 2ND CITY won't be quite so easy as escape from Targ (who says escape from Targ was easy? Hands up all those who managed it without sending for the Help Sheet??).

MERCENARY addicts will love this one, but it's more or less an extension of the original and not a new game in itself. Those expecting something completely different could be disappointed.

SMASH HITS 5

English Software
48K Disk(2) £14.95
48K Cassette(2) £9.95
1/2 Players
1/2 Joysticks

No new ideas from English Software this time. Instead we have another in a long line of compilations, entitled SMASH HITS 5, which is a logical progression from their previous four. This one comprises CHOP SUEY, ELEKTRAGLIDE, MEDIATOR and QUASIMODO and the review sample came as a two disk set with the same planned for the cassette format.

CHOP SUEY is English Software's popular karate game and has been on sale for many months, being the first game of this type readily available for the Atari. English Software obviously regard it in the same high esteem as Jet Boot Jack as it also figured in their HITS 4 compilation. An excellent game which was reviewed extensively in issue 19.

Next up is ELEKTRAGLIDE, the futuristic race game featuring stunning 3-D graphics. You either love or loathe this one depending on how difficult you find it. I happen to think it's totally unplayable but I have it on good authority that there are many gamesters out there who consider it a pushover – the type of people who can score 15 billion at arcade Sinistar, blindfolded and with both hands tied behind their backs! These same people even write to let me know what an idiot I am for not being able to play the LAST V8! (see review in issue 22).

MEDIATOR is an arcade/adventure game with ever-changing scenarios. It starts off like one of those boring Marslander type games, but stick with it and it gets better and better as you progress through the different screens with lots of intriguing puzzles to solve along the way. One of English Software's better efforts.

QUASIMODO is a strange offering as it is not one of E.S.C.'s own games and came to us originally from Synapse Software via US Gold. Despite the obvious implications of the title it is not a variation of arcade Hunchback. The initial stages are very reminiscent of Thorn-Emi's 'Orc Attack' as Quasi hurls rocks from the top of the cathedral walls in a effort to knock down the pursuing guards. After that it develops into a fairly routine ropes & ladders game where you must try to recover three stolen jewels which are scattered around the belfry somewhere. I managed to recover two of them but those pesky 'bats in the belfry' prevented me from recovering the third. No doubt somebody will write in to let me know they completed the whole thing in five minutes flat!!

So there you have it. Another excellent compilation and, as ever, superb value for money especially if you don't already have any of these four games in your collection.



COLLAPSE

Firebird
48K Cassette £1.99
1 Player
Joystick

Firebird are more noted for their budget software on other computers, namely the Spectrash and Crummydore 64 than on the Atari. They first entered the Atari market with CHIMERA – a brilliant game based loosely on Ultimate's 'Alien 8' and one of the best of the 'recent' Atari releases – and COLLAPSE is their next Atari effort to hit the high-street shops, retailing at an incredible £1.99.

COLLAPSE is a simple game in the arcade mould. You are presented with a grid-screen made up of grey sticks and bridges. You must guide Zen the bear around the screen, changing all the grey sticks to blue, before using his magic to set a 'Rotix' into action to make all the sticks collapse on top of one another. Once all the sticks have been cleared you advance onto a new screen. There are 96 different screens in all.

A couple of cruising aliens – no self-respecting arcade game would be the same without it's quota of aliens – hinder you at every turn, but you can keep them at bay with a liberal dose of 'pepper dust'. Extra pepper dust is available from all good supermarkets ..... sorry, I mean at random intervals throughout the game. Oh, and there's a timer too. Extra time units are gained by collecting the occasional diamond. Bonus points are awarded for collapsing the matrix in one go, but this is no mean feat. And that's about all there is to it. Like I said, simple but addictive to the point of being annoying! The graphics are distinctly Spectrumish and the game characters have jumped straight out of Jet Set Willy (oh no, not that game again!) but at least Firebird are trying and that's more than can be said for certain others.

More Firebird games are planned. At this standard and price they are not to be missed.

A DAY AT THE RACES

Red Rat Software
48K Disk £9.95
48K Cassette £7.95
1-5 Players
1 Joystick/Keyboard

The thrills and spills of the race-track at home. That's the general idea behind this release from Anvil Software now distributed by Red Rat. TV racing coverage may be confined to a Saturday afternoon but you can enjoy the luxury of a continuous flat-racing season seven days a week, fifty-two weeks a year simply by switching on your Atari!

The action takes place at the mythical Anvil Downs and features a full day's race-card covering 10 separate races. Up to five players can take part and, after all the names have been entered and bank-rolls selected, you are then invited to place your bets with Honest Ron's Turf Accountants (about as honest as Arthur Daley, I bet!) Every race carries five runners. The program boasts a database of 100 horses, each assigned it's own name, colour, strength and odds. It is, therefore, possible to study form and improve your chances of picking a winner as the races develop. A likely story!!

When all bets have been placed you are treated to a computer simulation of the race as the horses gallop from left to right across the screen towards the winning-post. When the leading horse crosses the line, the bets are tallied up and then added to or deducted from the various bankrolls before moving onto the next race on the card. When all 10 races have been run, the final bankrolls are displayed, together with the winning punter, and you are given the option of quitting (hopefully whilst you're ahead) or progressing to the next day's race-card. Compulsive gamblers will obviously choose the latter option – there's one born every minute!

The program is written in both Basic and machine-code but this shouldn't deter anyone from purchasing it as the whole package is professionally put together and plays just like a 100% machine-code game. Text predominates but the action, when it does occur, is fast and smooth. Check out the race animation of the horses, it's as realistic as you could possibly hope for.

A DAY AT THE RACES is a punter's dream. You can afford to 'blow' as much as you like without fear of emptying your wallet or losing your shirt. More than that, it should appeal to a wide range of Atari owners. First class entertainment for the whole family.

GHOSTBUSTERS
Activision
48K Cassette £9.99
1 Player
1 Joystick/Keyboard

It's arrived at last – the official cassette version of GHOSTBUSTERS, Activision's top-selling computer game based on the popular film of the same name.

Activision are plugging this cassette release as an enhancement of the original but, in actual fact, it's identical to the disk version which has been around for quite a while now. They claim a superior musical soundtrack, improved graphics and faster, smoother action for Atari GHOSTBUSTERS compared with other computer versions of the game, but then we don't need Activision to tell us that. We already know anyway!

A lengthy review of this game appeared in issue 16, so I won't repeat myself here. All the 'disk' features are incorporated in the cassette version, right down to the voice synthesis and the mocking laugh which barks out hysterically when the cassette is first booted up.

An easy game to get to grips with – despite all that complicated equipment – and, even though it may not tax the capabilities of all those mega-arcade freaks out there, it's quite difficult enough for the rest of us mere mortals (use the high-performance Ectomobile if you want a real challenge).

An undoubted classic and one which shot Activision straight up into the big-shot league, but this cassette version really should have been released along with the disk original. Let's hope they haven't left it too late?

COMING UP



JOHN SWEENEY IS BACK ON THE ADVENTURE TRAIL

THE PRICE OF MAGIK
Level 9
64K Cassette
£9.95

THE PRICE OF MAGIK
— Level 9 —

The Price of Magik is Level 9's sequel to the best-selling Red Moon. I am pleased to say that it is a very worthy successor to that excellent game. You are alone in a hostile world full of monsters and magic but, worse than Red Moon, you start the game with no knowledge of magic and have to learn what the spells are, what 'focus' objects are required to use them, and even what they do!

Your objective is simple, defeat the evil sorcerer, Myglar. To do this you will have to travel through scores of strange locations, defeating numerous dungeon denizens, and gaining vast magical powers. As with Red Moon, the game is rather large, over 200 locations, over 2 dozen inhabitants, over 40 artifacts, and 18 spells. The implementation is very similar to Red Moon, text scrolls up from the bottom of the screen, optional pictures (simple line drawings, but quite colourful) are drawn at the top of the screen, and your keystrokes are read into a large buffer and actioned quite speedily, AND it does it all simultaneously. You don't have to wait for the previous command to complete, if you know where you are going you can key ahead as fast as you like! The only thing to watch out for is that, if you are the violent type and have killed lots of monsters by force, their ghosts will return to plague you – probably while you are typing ahead!

The scoring system on The Price of Magik is a novel one. You start the game 100% sane and 20 years old. Every time you achieve something useful – reaching somewhere inaccessible, finding a spell focus, discovering or casting a new spell, etc., your sanity goes down by 1 or 2 percent and your age goes up by 1 or 2 years! Madness and Magik go hand in hand, but somehow you have to avoid dying of old age when you reach 100, while trying to achieve 0% sanity! Obviously you can set yourself the challenge of finding how to lose all 100 sanity points, but in fact you don't need to find every single point in order to defeat Myglar and win the game. Once you know most of the secrets, it is possible to play through and defeat Myglar while still 70% sane!

One of the nicest things about the game is the wide variety of solutions to some of the problems – I compared my solution with someone else's and discovered that we had solved about a dozen problems by different means. As you improve in your knowledge of magic you will find more and more ways of achieving certain objectives. For example, there are at least four different ways of getting the Claymore from the Statue! On the other hand there are some quite difficult problems which only appear to have a single solution.

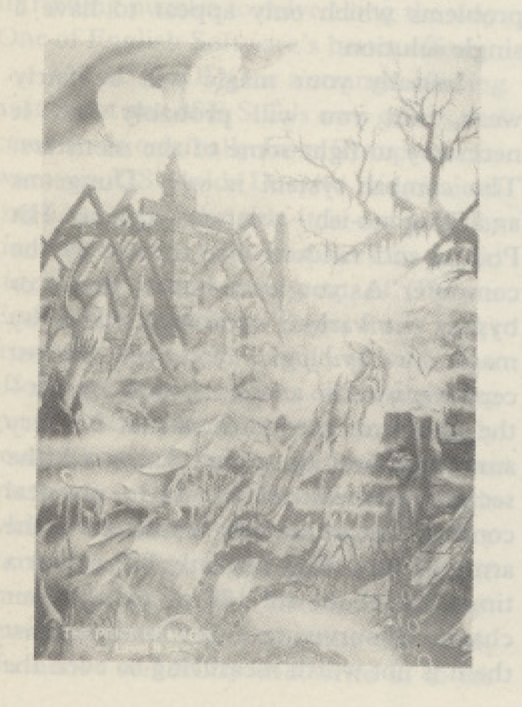
Initially your magic will be fairly weak, and you will probably find it necessary to fight some of the monsters. The combat system is very Dungeons and Dragons-ish – weapons, armour, Hit Points, and random dice throws by the computer. As you learn how to defeat or bypass the various creatures, either by magic or by logic, you will almost certainly want to avoid physical combat – the ghosts of the defeated can be very annoying, and once you know all the secrets you can avoid ALL physical combat. One of the best 'monsters' is the army of ants. You can only kill one at a time, and there are 128 of them! Your chance of surviving 128 rounds against them is not worth measuring so even the

most blood-thirsty adventurer will be forced to turn to logic or magic in the end.

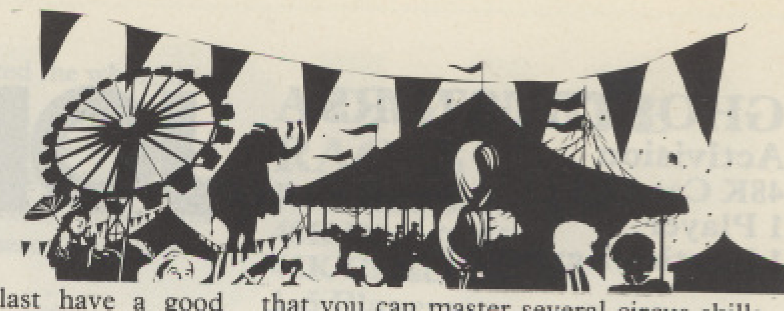
The game's understanding of English is excellent (within context) and Level 9 are now being slightly more moderate in their claims – 'The program copes with a wider range of English sentences than any other cassette-based game I've seen' – with which I have no argument. There are a couple of bugs which you should be aware of. 'The hilt in the ceiling' should say 'The hilt is still stuck in the ceiling', '658;stone' should say 'Stone'. Another concerns GET. I always use GET. I know it is not very good English, but it has one major advantage over TAKE, it is shorter! If you always use GET, you are likely to get extremely frustrated since, when you finally work out how to get the WHEEL from the mist and have the means to achieve it, you will find that GET WHEEL fails. At this one point in the game you must use the word TAKE – a very strange bug! One other minor point is this, the first time I succeeded in defeating Myglar I was most surprised to find that the game did not end! Some clue as to what is going on here might have been helpful as I wandered aimlessly for some time trying to work out what to do next. I had killed him by physical force but, presumably because his ghost still exists, this is not adequate. You MUST defeat him by magical means for the game to finish.

This game is Level 9's first use of the LENSLOK. Just in case you haven't encountered one, a LENSLOK is a small device containing prisms, used to decode various patterns on the screen. Without this you will not be able to complete the adventure.

At less than ten pounds this adventure is excellent value for money. Congratulations on another great game, Level 9. (P.S. Loved the Blue Box!)



BALLYHOO
Infocom
Diskette
£24.99



When did you last have a good argument with your computer? No, it's not quite as bad as Hitchhiker – this one admits when it's been lying to you! But now, not only can you argue with the computer, you can even argue with some of the characters in the game! Try approaching the EGRESS (carefully!), or getting some straw, or asking the guard about the kidnapped girl – I haven't had so much fun in ages.

Excellent! Superb! Sublime! Magnificent! Intelligent! Mind-boggling! Hilarious! Challenging! Magical! Frustrating! (Need I say more? Why haven't you bought a copy yet? What? No disk drive? Go and buy one immediately!)

Within seconds of starting the game, as I balanced precariously on a tightrope, I was already chortling to myself at the text scrolling up the screen. It is so much fun to play an Infocom game. You type things in and it responds. The amount of text inside the game is amazing, and the tortuosity of the minds of the Infocom storytellers, who have thought of clever, amusing, and misleading responses to some of the most ridiculous and irrelevant things that you could possibly type in, is quite incredible. (You may have guessed by now, probably just by counting the superlatives, that I think this is a rather good game!)

The game is classed by Infocom as being of their Standard Level, which does NOT mean it is easy! It is by a newcomer to their fold, by the name of Jeff O'Neill, who seems to have as devious a mind as the rest of them. Using their superb game systems and support teams he has produced an excellent adventure. Lots of interesting things to try, lots of puzzles and lots of very logical solutions – at least they are when you look back on them and wonder how on earth you couldn't have worked out what was going on sooner!

The game is set in a circus. The show is over. You are hanging around the lot when you overhear the circus owner telling a detective that his daughter has been kidnapped. You start investigating. Much later, when you find the detective unconscious (dead drunk, to be slightly more accurate) and you realise that you are completely on your own in a hostile world, surrounded by unfriendly performers and savage animals. But like all good Infocom games, clues are to be found all around you – if only you can recognise them! You will of course succeed in rescuing the young girl, providing that you can master several circus skills, but even then your troubles will not be over. Things go disastrously wrong at the last minute and you will find yourself forced to attempt one last death-defying feat. And just when you REALLY think it is all over... But I musn't spoil your fun!

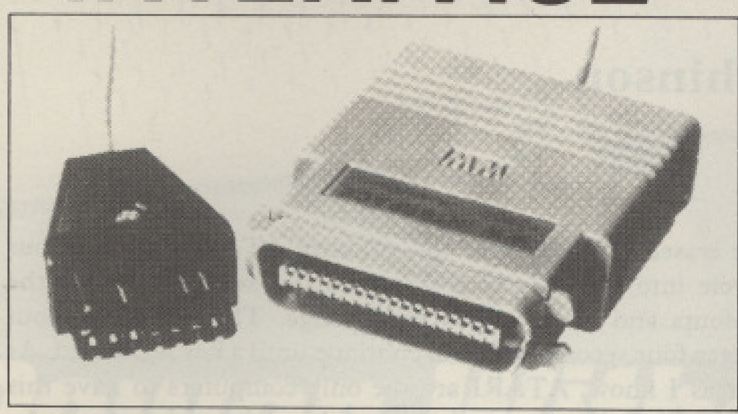
The packaging is as usual superb – you get your very own circus program, ticket, balloon (you have to provide the helium, unfortunately), and trade card advertising Dr. Nostrum's Prehydrated Genuine Preparation of Naturally Nitrated Compound Herbified Extract (gets rid of Pin Worms by paralyzing them, gets rid of detectives by making them dead drunk, and also useful for cleaning the trim on caravans! – if you manage to get hold of a bottle, then whatever you do, don't drink it!).

The only slightly disconcerting thing about Ballyhoo, apart from the fact that it doesn't understand the word JOIN – I suppose the Americans don't use it in the same way as we do? – is the way that the game moves forward. The laws of cause and effect appear to have been slightly bent! For instance, when I first found the detective lying dead drunk on the ground, I backtracked a bit (by RESTOREing) to discover how he got there. I eventually deduced that it was my success at befriending the gorilla (worth 10 points) which had caused him to appear there. But next time I played through the game from the start, doing various things in a different sequence, he didn't appear there! The previous three Infocom Mystery Adventures all have clocks ticking away in the corner of the screen – one minute for every move you make – and the events of the story are dictated by the passage of time. In Ballyhoo there is no clock to race against, you can spend as much time as you wish solving most problems. It is only when you gain certain points that time is deemed to have passed. And some events, like finding a drunken detective, are dependant upon your gaining multiple sets of points, regardless of sequence. Quite effective once you get used to it, and certainly a lot easier than racing against the clock all the time!

Expert or beginner, you are guaranteed to get a lot out of Ballyhoo. Infocom have proved yet again that a thousand words is worth far, far more than a picture.

P.S. Watch out for the shaggy lion – he's mean!

CENTRONICS INTERFACE



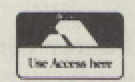
- Transparent to all s/w - no driver programme necessary
- Connect direct to 600 or 800/XL or 130 XE – or to disc drive if fitted

FCC SYSTEMS LIMITED

£59.99
Includes VAT +£1 P&P

THE OLD ARMOURY
COURT BARTON
CREWKERNE
SOMERSET
TA18 7HP

TEL: CREWKERNE (0460) 73442
PRESTEL MAILBOX 046073442



DEALER ENQUIRIES MOST WELCOME

POOLSWINNER

THE ULTIMATE POOLS PREDICTION PROGRAM

- **MASSIVE DATABASE** Poolswinner is a sophisticated Pools prediction aid. It comes complete with the largest database available – 22000 matches over 10 years. The database updates automatically as results come in.
- **PREDICTS** Not just SCOREDRAWS, but AWAYS, HOMES and NO SCORES.
- **SUCCESSFUL** SELEC guarantee that Poolswinner performs significantly better than chance.
- **ADAPTABLE** Probabilities are given on every fixture – choose as many selections as you need for your bet. The precise prediction formula can be set by the user – you can develop and test your own unique method.
- **SIMPLE DATA ENTRY** All team names are in the program. Simply type in the reference numbers from the screen. Or use FIXGEN to produce fixture list automatically (see below).
- **DISC/MICRODRIVE COMPATIBLE** Tapes supplied with conversion instructions.
- **PRINTER SUPPORT** Full hard copy printout of data if you have a printer.

Boxed, with detailed instruction booklet

PRICE £15.00 (all inclusive)

NOW AVAILABLE

FIXGEN 86/7

AT LAST: No more struggling for hours to get the fixture list into the computer. FIXGEN has been programmed with all English and Scottish fixtures for 1986/7. Simply type in the date, and the full fixture list is generated in seconds. Fully compatible with Poolswinner. Yearly updates available.

POOLSWINNER with FIXGEN £16.50 (for both)

COURSEWINNER V3

THE PUNTERS COMPUTER PROGRAM

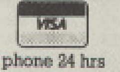
NOT JUST A TIPSTER PROGRAM, Coursewinner V3 can be used by experts and occasional punters alike.

You can develop and test your own unique winning system by adjusting the analysis formula, or use the program in simple mode. Coursewinner V3 uses statistical analysis of major factors including past form, speed ratings, course statistics, prize money, weight, going, trainer and jockey form etc, etc. It outputs most likely winners, good long odds bets, forecasts, tricasts etc. The database includes vital course statistics for all British courses. You can update the database – never goes out of date.

PRICE £15.00 (all inclusive) includes Flat AND National Hunt versions.

ALL PROGRAMS AVAILABLE FOR: AMSTRAD CPCs, AMSTRAD PCWs (ADD £3.00), All BBCs, All SPECTRUMS, COMMODORE 64/128, ATARI (48K+), SINCLAIR QL.
Supplied on tape (simple conversion to disc) – except PCW (on 3" disc) and QL (on microdrive)

Send Cheques/POs for return of post service to . . .



phone 24 hrs

selec SOFTWARE

phone 24 hrs

37 COUNCILLOR LANE, CHEADLE, CHESHIRE. ☎ 061-428 7425

(Send for full list of our software)

ATARI* USERS!

We have utilities you'll just love to use

Go on . . . treat yourself!

SELECTED ITEMS NOW ON SALE!

ST BATTERY BACKED CLOCK £39.95

ULTIMON!

*400/800	£39.95
600/800XL	£49.95
130XE	£49.95

*New Low Price

SUPER-CHIP!

400/800	£39.95
600/800XL	£39.95
130XE	£39.95

80 COLUMNS!

*400/800	£29.95
*600/800XL	£29.95
*130XE	£29.95

*New Low Price

PORTPRINT!
A new hardware interface.
Only £29.95
XL/XE Only

TRIPLER £22.95

SOFTWARE

Biorhythms	£7.95
File Loader	£4.95
XOS/Translator	£7.95
Boot Loader	£14.95
Utility Pac #1	£7.95
Utility Pac #2	£7.95

OVERWRITE!

*Backup Pac	£19.95
*Smart Disk Duplicator	£9.95
*Badsector Unit	£19.95

*Subject to not infringing copyright

1050	£7.95
810	£7.95

XOS/FIX! CHIP ONLY £19.95

THE GAP!
400/800 .... £19.95

600XL to 64K RAMKIT £29.95

ATARI is a trademark of Atari Corporation.

MAIL ORDER ONLY

Send S.A.E. for more details.
To order send cheque or postal order(s) to:
Computer Support (UK) Ltd.
26 Seacourt Road, Abbey Wood,
London SE2 9UW.
Hotline 01-311 7339 (24 Hour order line)

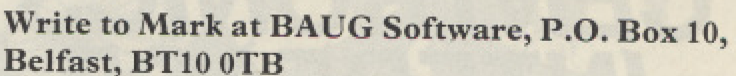
All prices are inclusive of VAT. Postage and Packing.

Worried about sending money? Just give us a call and we'll send it cash on delivery at no extra cost!

DEALER INQUIRIES WELCOME



First Steps



Write to Mark at BAUG Software, P.O. Box 10, Belfast, BT10 0TB

by Mark Hutchinson

I remember when I first bought my ATARI several years ago, PAGE 6 had not started and I had to subscribe to an American magazine. This was a new publication and was full of hints and tips. Unfortunately, as is the way of the world, most of the authors moved on to different and usually more involved subjects and beginners did not get so much help. If you, as a beginner, were to start reading that magazine at (say) issue 24 you would think it was for experienced users only. In case you think that of this magazine, the Editor has asked for a column of useful tips for those just starting with their ATARI's so here are a few to be going on with.

The quiet cassette: When I was using a tape recorder I detested listening to the beeps of transferred data so I would press CONTROL 2 (that is pressing the CONTROL key and the 2 key at the same time) and switch off the TV sound. When the data was loaded the computer would recognise its master's wishes and check if I had pressed a key and act on it. Thus, when it found CONTROL 2, it would sound the buzzer (400/800 only).

The BASIC autorun: Alex Dewdney advises that he types in CLOAD then types RUN three lines below this. Then, moving the cursor to CLOAD, he presses RETURN three times. The first RETURN asks the computer to CLOAD a tape, the second means the tape is ready and the third is stored in the last key pressed memory location. When the tape is loaded the computer prints READY and looks at this memory location. Finding a RETURN and with the cursor on RUN, it will obey the command and, hey presto, you have 'autorun' a CLOAD tape.

Music while you work: If you use a tape recorder you may know that it works on two channels, one for data and one for audio. This is used in the language tutorial tapes. If you insert a music cassette and POKE 54018,52 the cassette motor will start and you will hear the music through the TV speaker. POKE 54018,60 will turn it off.

At this point I had better explain a little about POKE and PEEK. Consider your computer as a massive amount of pigeon holes. Each hole will contain a number between 0 and 255. Each number tells the computer to do something. As you load a program into the computer, these holes are filled one by one. Easy so far?

To find out what a specific memory location has stored, you ask the computer to look (PEEK) into that location and print the result. PRINT PEEK (54018) for instance. To make the computer do something else you must change the number in that location by inserting (POKE) another number as we did above. Often many numbers will do the same job. To get the best out of this method I would suggest buying a good memory map which lists the location, what they do and how to use them.

Changing colours: You may remember, several years ago, the black and white TV tennis games. After much use an image was burnt into the screen phosphor and this could not be erased. To overcome this problem ATARI built a colour cycle into the operating system. After several minutes the colours and intensities would change. This happens about every four seconds and will continue until a key is pressed. As far as I know, ATARI are the only computers to have this innovation. Not so good if you rely on joystick input only, however, you can stop this cycle with POKE 77,0. This will only last several minutes so you will have to make sure that it appears during the repetitive part of the program that scans the joystick.

Quiet keys: The 400/800 models relied on a miniature speaker for audio keyboard response but the new models send the tone to the TV speaker. Apart from turning off the sound (not a good programming technique!), you could POKE 731,1 (POKE 731,0 to turn it on). Obviously this is XL/XE only.

Faster/Slower keys: The ST has a control panel that lets you select keyboard response time (the delay before a key starts to repeat when held down), and the keyboard repeat time (how fast it will repeat when held down). All very good for ST owners but did you know that the XL/XE can do it too? POKE 729,X for response time and POKE 730,X for repeat time, where X is the delay.

Stop that listing: This hint is well known by everyone except beginners. When you ask the computer to LIST a program, it will list every line. If the program has dozens of lines it will push them over the top of the screen. You could hit BREAK but then you would have to LIST again. CONTROL-1 will temporarily stop the listing and pressing CONTROL-1 again will let the listing continue. I wonder how Jackie in Germany is getting on with this?

Re-run a program: Most disk programs that you buy will reboot when you press SYSTEM RESET. You can make your own programs reboot by POKE 580,1 but the disk will need some sort of AUTORUN.SYS file for this to happen.

Many of these tips came from Alex Dewdney and Mr. Pursglove for which much thanks. I also have two mysterious listings from 'Mitch' Mitcham that I will report on next issue. In the meantime if you have any tips or hints – not necessarily POKE statements – please send them to me so that I can use them in the next issue. Better hurry, it comes out sooner than you think. I know, I have to write for it!

A last tip from Mr. Pursglove. If you need a 1029 ribbon go to Boots store and ask for a (sacrilege) Commodore MPS 801, about £3.

During October I will be in the Stafford area (by coincidence!) on a course lasting three weeks so if you have been waiting on a reply from me, this is the reason it may be late. However, please do not let that stop you writing to me. I really enjoy the mail I receive.

BACK ISSUES

PAGE 6 back issues represent an excellent way of increasing the enjoyment of your Atari with articles to enlighten you, programs to type in and reviews of software to guide you. Almost all of the content of past issues will be as fresh and relevant today as when it appeared – increase your enjoyment now, before it's too late!

ISSUE 10 – ADVENTURE SPECIAL – An issue with Adventures as its main theme with a super, challenging type in Adventure HOUSE OF SECRETS, winner of our readers' poll for that year. Plus an interview with Scott Adams, a (nearly) complete list of Atari adventures, an Adventure cracker, Diamonds, Spinner, Screen Colour and the usual assortment of reviews.

ISSUE 13 – A great scrolling game FLIGHT OF THE SWAN that was one of the winners in our scrolling competition plus great games, Camelot, Bomb Escape and Bull Ants. Also Music Maker, 1020 Printer Handler, Player Missile Graphics in Machine Code, Music Reviews and our regular Adventure column.

ISSUE 19 – The first coverage of the ST but not to be outdone, plenty for the 8-bits. A great machine-language space game SECTOR 10, a super utility, Magfile, to keep track of your books and magazines plus The Chase. The second part of our series on Display Lists, build your own Speech Synthesiser, a review of 1985, in-depth Adventure reviews and plenty more.

ISSUE 20 – GRAPHICS SPECIAL. A super special issue with a graphics theme. Draw some masterpieces with GRAPHICS WORKSHOP and explore your graphics potential with Colour Palette, Picloada, Colour Attributes and CIO Slideshow. An in-depth review of Printshop and Graphics Art Department, the final part of Display Lists and the Adventure column. 11 pages devoted to the ST plus a colour feature ATARI ART and ST GALLERY. And there's more! BLOCKBREAKER is one of the best games to have been published in any magazine. Don't miss it!

ISSUE 21 – A packed issue with games, TRAIN CRAZY, Revenger and Forklift. Utilities Scalemaster, Quick Disassembler and Measuring Temperature. Programming hints with Doing The Impossible, Error 8 Solved and THE GUIDE TO ERROR CODES. Reviews of Flight Simulator II, Hitchhiker's Guide to the Galaxy, and the latest Adventures. For the ST a DEGAS to NEO converter, Lattice C reviewed and reviews of a whole host of software.

ISSUE 22 – More serious users will enjoy SMARTSHEET, a Visicalc like type-in spreadsheet, and our review of Paperclip whilst gamesters will puzzle over Tricky Cubes and try to survive Hidden Depths. The Guide to Error Codes is concluded and there are articles on Fractals, Tape Problems and some less well known Adventures. Loads of reviews and some great new routines for Blockbreaker. ST users will find out how to program Sprites and can read reviews on Time Bandit, Pro-Fortran 77, VIP Professional and more.

ISSUE 23 – Another superb machine language game Water Ski School will test your reflexes. Wordsearch will challenge those who like puzzles and other listings include Superclown and the utilities Xref and Verify. A huge review of Ultima IV heads a comprehensive review section and Going Online Part 1 will let you know if telecommunications is for you. ST owners can discover how to get a bigger screen on their colour monitor and read reviews of Zoomracks, Sierra On-Line adventures and Pro-Pascal amongst others. Also, is it worth adding a 5/4" drive to your ST?

All back issues are £1.20 each in the U.K., £1.75 for Europe or surface mail elsewhere and £2.67 for Air Mail outside Europe.

Please make cheques/postal orders payable to PAGE 6. Send your order to PAGE 6, P.O. BOX 54, STAFFORD, ST16 1DR, ENGLAND.

LOTS MORE!

Subscribers to PAGE 6 gets lots more special offers. Books, an incredible collection of Public Domain software for 8-bit and ST machines, exclusive software, binders and more. To find out what you are missing ask for a copy of our **PAGE 6 ACCESSORY SHOP LEAFLET.**

GET THEM ON DISK

All of the most recent issues of PAGE 6 are available on disk – including those out of print issues!

A PAGE 6 Issue disk contains all of the programs (except ST) from a particular issue, ready to run from a custom Menu. No more frustrating hours typing all those long programs. See just how good they are without the effort.

ISSUE 14 – Contains COUNTERACTION, SUPPLY BLASTER, CROSSWORD CREATOR. DEPTH CHARGE, ACCESS III, RAINBOW START, BASIC ANIMATION and TYPO II.

ISSUE 15 – Contains THE WANDERER, KANGA, TICK TOCK, AUTOCAR, THE BOOSTER and PLAYER MISSILE GRAPHICS

ISSUE 16 – Contains BLACK BOX, FREEWAY ACE!, DRAUGHTS, TURN THE TABLES, AUTOCAR GRAPH and CHARACTER PLOTTING programs.

ISSUE 17 – Contains RENUM, SHOOTING GALLERY, X-Y-ZAP, INLAY CARDS, CASTLE MORGUE, MATTHEWS LABEL MAKER and several programs on ANTIC modes 4/5.

ISSUE 18 – Contains BERTIE, GRAND PRIX II, BLITZ, LISTER, STARS, TYPO 3 and several programs on Display Lists.

ISSUE 19 – Contains SNOWFALL, THE CHASE, MAGFILE, SECTOR 10, STARKIES UTILITIES plus programs for the Speech Synthesiser and several programs on Display Lists.

ISSUE 20 – Contains BLOCKBREAKER, GRAPHICS WORKSHOP, COLOUR PALETTE, PICLOADA, COLOUR ATTRIBUTES, CIO SLIDE SHOW plus more Display List programs and pictures for Graphics Workshop.

ISSUE 21 – Contains REVENGER, TRAIN CRAZY, FORKLIFT, SCALEMASTER, DOING THE IMPOSSIBLE, QUICK DISASSEMBLER and MEASURING TEMPERATURE.

ISSUE 22 – Contains SMARTSHEET, TRICKY CUBES (two versions), HIDDEN DEPTHS and new versions of BLOCKBREAKER. Double sided disk.

ISSUE 23 – Contains utilities XREF and VERIFY! Games SUPERCLOWN and WATER SKI SCHOOL (in machine language). The word puzzle game WORDSEARCH as well as COLOUR MAGIC demos and TWO BONUS programs!!

ISSUE 24 – Contains – all the program listings from this issue.

PAGE 6 Issue disks will run on any 8-bit Atari with 48k or 64k memory. Each disk is just £3.95. Compare that for value!

Order your disks from PAGE 6 by post from PAGE 6, P.O.BOX 54, STAFFORD. ST16 1DR or by telephone using ACCESS or VISA on 0785 213928.

Postage is FREE in U.K. Overseas please add £1 per order (for any number of disks).

DUST COVERS

You've spent a lot of money on your equipment, why spend more on repairs from breakdowns caused by dust, dirt and spilt liquids? Dust covers from PAGE 6 are custom made for each piece of equipment and come in smart natural PVC with a brown or black trimming as appropriate.

400/800/600XL/800XL/130XE	£3.95	1040ST	£4.95
410 Old Style Cassette*	£2.95	520ST	£4.95
410 New Style Cassette	£2.95	3½" SF354/SF314 Disk Drive	£2.95
1010 Cassette	£2.95	2 stacked ST disk drives	£3.95
XC11 Cassette	£2.95	SM124 Monochrome Monitor	£4.95
810/1050 Disk Drive	£3.95		
1020/1027/1029 printers	£3.95	Other printers/monitors (to order)	£4.95

***old style does not have a pause button.**

Some popular printer covers are held in stock but most can be obtained to order. Please state exact model when ordering.

Telecommunications is still a mystery area to many owners. Is it worth it? What equipment do you need? In this two part article John Davison reviews the most popular package and gives a first hand account of his experiences.

In Part 1 of this article we looked at the Datatari communications package, including the Miracle Technology WS2000 modem, Datatari interface, and Multi-Viewterm communications software. Part 2 describes what happened when we first tried to use it 'for real'. Remember, we were complete beginners at the telecommunications game, and hadn't a clue what to expect. Except for one thing – a hefty phone bill. But The Lady of Infinite Wisdom had provided us with a jar so we could pay for our calls as we made them.

GOING ONLINE

Part 2

by John S. Davison

First Contact

My son produced a list of bulletin boards from a computer magazine, giving us a good starting point. The Atari based Basildon ITEC board (0268-25122) got the honour of being our very first contact, so we configured Multi-Viewterm to its requirements and dialled the number. The phone rang, then a high pitched whistle was heard. Great – a modem at the other end! Quick, this is costing money – switch software into terminal mode, switch modem online, and...and...and...nothing! The screen stayed blank. We re-checked software and modem settings, and these seemed okay. A few tentative keystrokes made no difference, either. It obviously wasn't going to work, so we gave up. Cost so far: 40p (cheap rate). Not a good start.

Undaunted, we chose another board from the list. This was SABBS (0698-884804), an Atari based board in Scotland. We dialled and waited. Yes, there was the modem tone and....YES! Something on the screen – we were talking to another computer! When the shock of this success had subsided, we gingerly followed the logon procedure shown, then selected a few commands from the seemingly meaningless list presented, without really knowing what we were doing. We eventually found a help facility, and got it listed to the screen (and in the buffer), so decided to log off and print this out to study, so we'd have more idea of what to do. BUT – how the dickens do you log off?

At this point there was a great temptation to simply switch off the modem and hang up the phone, but this, apparently, is one of the greatest sins you can commit in the eyes of a board's System Operator (Sysop), as it can sometimes cause the software to 'hang', making the board unusable by later callers. Perhaps that's what had happened to the Basildon ITEC board. We resisted this, and eventually discovered the correct command, and logged off. Phew!

The next job was to get the printout. Oh NO! We forgot to turn on the buffer to capture the screen messages. What a waste of time – and another £1.20 on the phone bill. At that point we decided to call it a day, having spent £1.60 on phone charges and having got nowhere. I ostentatiously dropped coins to the value of £1.60 into the jar The Lady had thoughtfully provided for the purpose, and made enthusiastic noises to her about how we'd got on.

The Breakthrough

The following night we made a startling discovery. Buried in the middle of the magazine list of bulletin boards was a system called Gamlingay CBBS (0767-50511), based about 4 miles from where we live! Local phone charges! So we set up again, and dialled in. I remembered to turn the buffer on this time, and ....there was the board, clear and bright! It claimed to belong to the Chiltern CP/M User Group, and invited us to register if we weren't already users. This involved giving name, where calling from, and password for use on future calls to the board.

A help function called up an explanation of commands and facilities. We selected the message facility, and discovered a lower level help facility which explained how to use the various message options. We chose a summary list of all the current messages on the board. The list was long and items were soon lost by scrolling off the top of the screen, but no matter – this time everything was going into the buffer on the 130XE and could be called back to the screen at any time, or dumped to cassette, disk, or printer for reading later.

Found – Other Atari Users

Most of the message subjects seemed foreign to

continued overleaf

Atari users, with frequent references to Wordstar, Dbase II, CPM, BIOS, and other CP/M topics. But suddenly, a reference to Atari, then another. This was more like it. We then went into the Read Message function to get the full text. The first one was a general invitation to all Atari users to contact the message originator. The second one was a cry for help in locating an Atari cassette recorder.

Plucking up courage, we chose the Enter Message function, and replied to the first message, explaining that we only had the modem on loan, and he wouldn't hear from us again if he didn't reply pretty quickly.

There was little else of interest to Atari users so we decided to log off. We were invited to leave a message for the Sysop if we wished, so we left a few complimentary words about his board, and logged off. This time, we'd been online for 35 minutes for a cost of about 30p – very reasonable.

Next Stop – Micronet

The Datatari package is also suitable for accessing Viewtext services, the most well known of which is probably PRESTEL, with its successful offshoot Micronet. The bad news is that to use this service you have to pay a subscription, currently £16.50 per quarter, and this is on top of your phone charges. For this you get access to both Micronet and the more general PRESTEL services. The good news is that in most of the U.K. you can log on through a local access number, which means you only pay local call rates, currently about 43p per hour.

To get into PRESTEL/Micronet you need a User Identification Number and a Password, which you're only given after you've signed up for the service and handed over your money. However, you can try out the service for free before joining. Just call Micronet on 01-278-3143 (voice line) and they'll give you details of the special demonstration section and how to log onto it.

The Datatari package handled Viewtext in the same fuss-free way it handled 'normal' bulletin boards. The only disappointment was that, although the software reproduces the PRESTEL graphics, they're only in monochrome. You don't get the glory of full colour. You can set the background to the colour of your choice, but that's about it!

We spent a pleasant 30 minutes wandering around the demonstration section, looking enviously at the special facilities for Commodore, Sinclair, Amstrad and Acorn owners, and wondering if Micronet would ever wake up and begin supporting The Best Home Micro in the World. I guess you know the answer to that as well as I do.

It's not all bad, though. PRESTEL itself is 'non-sectarian', and there's a lot of free information available in there – over 300,000 pages, they claim. It's potentially useful to anyone, no matter what computer they use. I guess it's rather like a souped up teletext service, with the advantage that you can interact with it.

In addition to the 'free' public information, bulletin board sections, etc., there's also more specialised stuff, which you pay for separately, either by subscription or by paying for each screenful of data you look at. Micronet itself is an example of this, as your £16.50 subscription consists of a basic PRESTEL subscription, plus an extra charge for the Micronet service.

Various companies are now beginning to offer their services through PRESTEL, such as theatre ticket bookings, travel bookings, and home banking services, amongst others. And, of course, there's electronic mail and telex facilities. Unfortunately, as we were only logged onto the demonstration section we couldn't try these things out 'for real'.

Downloading Software

One thing we hadn't tried so far was downloading software. This is often touted as one of the big attractions of owning a modem. Basildon ITEC claim to hold downloadable Atari programs, so we decided to give them another try. This time we got through straight away. After the usual logging on formalities, there were a series of messages announcing free download software specifically for Datatari users (that's us!).

We eventually got to the download area, and found that the only programs were terminal programs to enable you to communicate with the board and transfer download files to disk. As we were already using Multi-Viewterm this seemed a bit pointless, but maybe we were missing something.

Purely as an experiment we tried to download a Datatari RS232 handler. A simple command plus filename got this started, resulting in what looked like random garbage being written to the screen. After what seemed like an age (at long distance phone rates) it stopped, so we now assumed we had the program in the buffer. But what do we do with it now? It was obviously a machine code program and it was in the buffer with all the other messages we'd had on the screen, so we couldn't simply save it and run it. I guess we should have cleared the buffer, selected download, and turned the buffer on just before the download started. There was nothing in the Multi-Viewterm manual about this.

Happiness at Last

We contacted various other boards over the next couple of weeks, and only came across one that really impressed us. This was the Central Birmingham Atari Bulletin Board System (CBABBS, on 021-430-3761). This one radiated an air of friendliness right from the start. It was easy to use, and had lots of interesting sections on it, even downloadable software – some of it being programs from past issues of PAGE 6. And, it was dedicated to Atari, so there should be little or no Beeb, Commodore, or Sinclair junk cluttering up valuable disk space.

A message explained that Multi-Viewterm has been updated, now having an XMODEM Transfer function, for use in downloading software. You can get this upgrade by returning your original disk to the

manufacturer, who will put the new version onto it for you. It went on to explain exactly how you use it to achieve a download. Full marks to the brave souls running this board – and to Miracle Technology for this civilised update policy!

Can You Afford it?

The main barrier to these activities at present has to be one of cost. The package we used costs about £185, which is not bad when you consider what you're getting. The real killer is the cost of the phone calls. This is acceptable if you have a board within local charge range, or are prepared to pay £66 per year subscription to Micronet, but even Micronet isn't of direct interest to Atari users at present.

In all, we were logged onto various systems for 190 minutes. Counting the money in the jar it came to £7.80 – and after only two weeks use! The approximate cheap rate call costs per hour are £4.32 for calls over 35 miles (a little cheaper on some connections), £1.73 for calls up to 35 miles, and 43p for local. A realistic typical session is probably about 20 minutes, if you're doing anything more than just checking if there are any messages for you. So a local board would cost you a very reasonable 18p per session, but a long distance one could cost a hefty £1.44 for the same thing. For comparison, at peak times these costs would be about £4.04, £2.30, and 77p per session respectively. And how many sessions would you have each week? Go on, be honest!

The cost drops considerably if you use the board purely as a mailbox, when a 5 minute session is probably adequate, once you know what you're doing. But – will you be able to resist the lure of peeping into those other areas? Or calling just one more new board? Beware, The Lady with the Jar will be waiting, and you may never have any loose change ever again.

Conclusions

Telecommunicating is great fun, but can be costly if you have no self discipline. Currently, it seems of limited practical use, but then many people say that about home computing in general. It's as useful as you yourself make it.

The Datatari package? It worked very well for what we did with it, but could probably be improved by better downloading facilities, and/or better instructions on how to use the facilities already included. The news from CBABBS indicates that this is already being fixed, although the 12K buffer size problem mentioned in Part 1 of this article still needs attention. Perhaps the author could modify the program to dynamically transfer the data to disk or ramdisk as it is received. Now we know why Basildon ITEC were offering those terminal utilities! With these modifications Multi-Viewterm would merit the classification of Excellent.

The $64000 dollar question – would I go out and buy this package? Shhh! The Lady might be listening.-...but the answer is yes. ●

UPDATE

CIO SLIDESHOW (ISSUE 20): The author Ian Finlayson has discovered a small bug which causes problems when a picture is given an 8 letter filename. The solution is to amend line 100 as follows

```
100 F$(3,10)=A$(3,10):FOR N=4 TO 11:IF
F$(N,N)=" " THEN F$(N,N+3)=".PIC"
```

HIDDEN DEPTHS (ISSUE 22): At the end of the game you have to input the skill level twice in order to play again. To avoid this simply delete lines 5620 and 5630.

QUICK DISASSEMBLER (ISSUE 21): Reader Andrew Clegg has submitted the following routine which will enable the output to be directed to a printer rather than the screen. Simply add these lines to the original program

```
WK 100 DIM LCT$(256),TR$(4),VL$(5),M$(102
   4),P$(40),L$(1)
VZ 105 OPEN #3,4,0,"S:"
DX 185 POSITION 2,16:? "Do you want a pri
   ntout ";:INPUT L$
AL 740 IF ADRS=EA THEN POSITION 6,22:? "R
   equested Address Reached ":IF L$="Y" T
   HEN GOSUB 2000:END
QK 750 IF CYC=20 THEN POSITION 7,22:? " H
   it Any Key To Continue ":GET #1,A:IF L
   $="Y" THEN GOSUB 2000:? "K":GOTO 200
NP 755 IF CYC=20 THEN ? "K":GOTO 200
MF 1999 REM PRINTOUT ROUTINE
XL 2000 P$="":FOR Y=1 TO 20:FOR X=0 TO 39
   :POSITION X,Y:GET #3,N
PC 2010 P$(X+1,X+1)=CHR$(N):NEXT X:LPRINT
    P$:P$=""
LQ 2020 NEXT Y
AJ 2030 RETURN
```

●

MULTI-VIEWTERM UPDATE

As briefly mentioned in the first part of this article, an upgraded version of the Multi-Viewterm software, which supports XMODEM file transfer is available. This version, which is available as a free upgrade if you send your original disk back to Miracle Technology, includes both Xmodem Upload and Download direct to disk (which means file size is limited to disk size, not the 12K buffer). Other facilities which have been added are: text upload from within online mode (uses X-on X-off); CR/LF conversion to EOL of text in buffer; access to a second disk drive; carousel in View mode; START active in all menus; and many other improvements which make it an even better package.

The upgraded version has been available since September 1985 and new purchasers should therefore already have this version.

Contact

STARTARI UK USER GROUP: We wish to contact other user groups especially in U.S.A. We would like to contact pen pals and groups with ideas on Atari matters from around the world. All letters answered. Write to John, 26, Bromley Gardens, Parkside, Houghton Regis, Dunstable, Beds. LU5 5RL, England.

ATARI USERS GROUP: Do you live in Shropshire? Then learn new programming skills, see new software, meet other Atari users, share problems and get the best out of your Atari. Why not join the Shropshire Atari Users Group? We meet at the People's Centre, Madeley, Telford on the last Sunday of the month from 7 p.m. For further information contact Mark on Telford 590156.

HELP ME!: I desperately need pen pals! I have an 800XL and recorder and I would like to get in touch with Atarians worldwide. We could exchange ideas, hints and tips etc. Please write to me. Tyrone McKenna, 98, Marley Street, Court South, Rathfarnham, Dublin 14, Eire. I promise to reply to all letters. If possible please send s.a.e. for quick reply.

PEN PALS WANTED: I would like to contact any other Atari users anywhere in the world. I have an 800XL, a 1010 recorder and a 1050 disk drive. Also PAGE 6 issues 8 & 9 wanted. Will try and answer every letter received. Tony Brady, 258, Castletown Estate, Leixlip, Co. Kildare, Ireland.

DISABLED USERS AND BASICODE: Firstly I would like to contact other disabled Atari users. Secondly, I have been given cassettes with the old BBC chip software in BASICODE but cannot run this without the Atari translation program. Can anyone tell me if this exists and where I can obtain a copy? I have written to Broadcast Support Services but they have not bothered to reply. Jim Cutler, 44, Water Street, Great Harwood, Lancs. BB6 7QR. Tel. 0254 887311.

LIGHT PEN FOR SALE: Atari compatible with instructions and sample programs. Only £15. Simon Brownlee, 9, Canterbury Road, Farnborough, Hants GU14 6NS.

48k MEMORY BOARD: For Atari 400. Non working – for spares/repair. £8 Tel. E. Bowden on NEBO 487.

FANTASY ROLE PLAYING: I have been playing for about 5 years and would love to exchange ideas, hints, tips etc. about anything concerning role-playing games. Has anybody written any BASIC programs for the book-keeping side of role playing on the Atari? I have an 800XL, 130XE, 1050 and 810. Even if you do call yourself Eric the Cleric give me a ring on 0429 221531 ext. 218 or on 0429 268727 in the evenings and ask for Paul Caden (alias Conan, deceased!).

850 INTERFACE: For sale, as supplied new with manual, cable and power supply. £50. Phone Mike Doyle 0509 267992.

JUTLAND SIMULATION: Would anyone be interested in co-operating to produce a simulation of the battle of Jutland? I can provide all historical and technical details but lack advanced programming knowledge. Any other wargame ideas welcome. Please call Ian Hayward on Brighton (0273) 414880.

FOR SALE: 1027 printer £80. 1029 printer £75. 1010 recorder £15. BASIC XL £35. DOS XL £15. Conversational French and German, Touch Typing £5 each. Contact Alva Grannell on 0603 31122 from 9.00 a.m. to 4.30 p.m. Monday to Friday.

ST PHONE HOME: The viewdata bulletin board with the added ingredient – FUN! Log on and let us know you are there. Coming soon, a section for ST owners on pages *ST# and *1632#. V23. 1200/75 bps, 24 hours a day. 01 888 8894.

WANTED: Eastern Front cartridge with instructions and an original Atari joystick (square type). New or nearly new. Linda Tinkler, 45, Torrington Drive, Thingwall, Wirral, Merseyside L61 7UZ.

PEN PALS WANTED: I would like to make contact with Atari users around the world especially in America. I have an 800XL and 1050 disk drive. Please write to Fred Weilenman, Domela, Nieuwenhuisstraat 21 I, 1069 SK Amsterdam, Netherlands.

48k EXPANSION BOARD FOR SALE: For 400. Fitting instructions included or will fit if required. £40. Contact Mr. A. James, 83, Clarendon Road, Morecambe, Lancs.

LEICESTERSHIRE USERS: I have an 800XL and 1050 disk drive and would like to hear from anyone in the Leicestershire area. Contact Jim Tovey, 21, Hoball Close, Newparks Estate, Leicester, LE3 6QW.

ATTENTION PROGRAMMERS: Atari Users Group in Dublin needs more programmers. Our first project is already started but team work speeds things up. It's a money maker, want to be in on it? Contact Nino on Dublin 740677 between 6 p.m. and 10 p.m. or Gus on Dublin 425918 between 10 a.m. and 10 p.m.

ADD-ONS FOR SALE: Omnimon m/c monitor for the 400/800 £36. Maplin Wordmaker speech synthesiser £39. Stuart Speech Recognition system £21. Atari trackball £8. Blackthorn Centronics Interface £39. R.W.Hearn, 10, Speedwell Close, Pakefield, Lowestoft, Suffolk, NR33 7DU. Tel. 0502 66026.

MODEM FOR SALE: Miracle Technology WS2000 modem complete with Datatari interface, Multi-Viewterm software and manuals. £99 inc. Phone 851 5942 after 7 p.m.

MODEM FOR SALE: WS2000 modem c/w Multi-Viewterm and Datatari interface plus additional software, mags etc. thrown in. All you need for £100. Call Bryan on 0298 78071.

INDUS GT DISK DRIVE SYNCROMESH: Does anyone know where or how I can get the syncromesh modification? Also the following magazines wanted. ANTIC Vol. 3 No.6, Vol. 4 No's 4,5,6,9 and 10. ANALOG 37 and 41. Will buy or exchange. Phone Mike Knight 0454 315337 evenings or 0272 795810 daytime.

ANTIC MAGAZINES: Volume 2 issues 3,4,8 and 9 and Volume 3 issue 2. Offers. Also January '86 revision Ultimon monitor and debugger for the 800. As new £30. Phone Keith on Chelmsford 269030.

ST AND XL PEN PALS WANTED: I have an ST with colour and mono monitors and printer and an 800XL with disk drive and am looking for anyone anywhere to become my friend and swap hints and tips. Please write, all letters will be answered. Martin Bradwell, 157, Crosby Road, Grimsby, S. Humberside, DN33 1LY.

SOUTH WALES ATARI GROUP: The above group help its inaugural meeting on Thursday 18th September at 6.30 p.m. at Cardiff I.T.E.C. Frixa House, East Canal Wharf, Cardiff. All Atari users are most welcome.

KIT FOR SALE: All boxed and with dust covers. 800XL, 1050 disk drive, 1010 recorder, joystick plus software and books. Also PAGE 6 from issue 2. £140 the lot. Phone Tony Tinning on Horsham 54017, evenings.

XC11 DATA RECORDER: For sale, little used. £20. Compute!'s Second Book of Atari. £5. Roger J. Byng, 8, Salisbury Road, St. Annes, Bristol BS4 4EL. Tel. 717939.

SYSTEM FOR SALE: Indus GT disk drive, Atari 800 computer, 410 cassette and software for sale. All in excellent condition with original packaging and manuals. For details phone 0429 236200 and ask for Parvin.

BOOK EXCHANGE: I am willing to swap my copy of De Re Atari for a copy of Revised Mapping The Atari. Please write first. Mark Reed, 70, ST. Nicholas Street, St. Andrews, Fife, Scotland, KY16 8BH.

BOOKS FOR SALE: The ANALOG Compendium £10 o.n.o. Compute!'s First Book of Atari Graphics £8 o.n.o. Atari PEN PAL wanted in ESSEX area. Phone Romford 48250 or write to Philip Curcher, 131, Sheringham Avenue, Romford, RM7 9DR.

EARTHQUAKE 1906: Please help. How do you get past the crack outside the tile-plaza? What do I need to vault over? Paul Cole, 64, Penrose Street, Walworth, London, SE17 3DW.

ADVENTUREWRITER: Many people need help in solving an adventure but I need help in writing one!!! Can anyone offer assistance with the program Adventurewriter? Steve Morris, 85, Sydney Avenue, Leigh, Lancs. WN7 3LT.

The Midlands ATARI Center

212-213 Broad Street



TEL: 021-643 9100

212 BROAD STREET, BIRMINGHAM B15 1AY



A

FRIENDLY WELCOME

ASSURED

EXPERT ADVICE

ALWAYS AVAILABLE

OPEN MON-SAT

9:30 a.m. - 6:30 p.m.



A COMPREHENSIVE SELECTION OF SOFTWARE ALWAYS IN STOCK

YOU'VE READ THE REST



NOW TRY THE BEST

AS ATARI SPECIALISTS WE OFFER KEENEST PRICES AND LARGE UP TO DATE STOCKS

TRY OUR MAIL ORDER SERVICE GOODS DESPATCHED BY RETURN --- *NO WAITING*

LLAMASOFT

SEE US AT THE
ATARI CHRISTMAS SHOW
28th – 30th November

presents



The **THIRD GENERATION** of Jeff Minter's unique LIGHT SYNTHESISERS

- MIND/MACHINE SYNERGY -

COLOURSPACE: allows the user to create **dynamic, interactive light displays** using the Atari's 320 x 200 512-colour graphics. Do it to music... your ears won't believe your eyes...

COLOURSPACE: mouse control, over 100 keyboard commands, compatible with NEOchrome images (for foreground and background displays), 20 presets, 84 definable lightforms, record mode, load and save of performance data from disk.

COLOURSPACE: raw 68000 power harnessed to create a completely new artform... the first true **light synthesiser**... play light like music...

COLOURSPACE. Discover why you bought your ST.

NOW AVAILABLE at £19.95, from retailers of ATARI software or direct from
LLAMASOFT 49 Mount Pleasant Tadley Hants
Tel: 07356 4478
SEND S.A.E. FOR CATALOGUE & NEWSLETTER